Dell™ Vostro™ 1200 Owner's Manual

Model PP16S

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

⚠ **CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.**

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Model PP16S

November 2007 **P/N RK930** **Rev. A00**

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Finding Information

> *NOTE:* Some features or media may be optional and may not ship with your computer. Some features or media may not be available in certain countries.

> *NOTE:* Additional information may ship with your computer.

What Are You Looking For?	Find It Here
• A diagnostic program for my computer • Drivers for my computer • Notebook System Software (NSS)	**Drivers and Utilities Media** Documentation and drivers are already installed on your computer. You can use the media to reinstall drivers (see "Reinstalling Drivers and Utilities" on page 106). Readme files may be included on your media to provide last-minute updates about technical changes to your computer or advanced technical-reference material for technicians or experienced users. **NOTE:** Drivers and documentation updates can be found at **support.dell.com**.

What Are You Looking For?	Find It Here
• Warranty information • Terms and Conditions (U.S. only) • Safety instructions • Regulatory information • Ergonomics information • End User License Agreement	**Dell™ Product Information Guide** Dell™ Computers Product Information Guide
• How to set up my computer	**Setup Diagram** **NOTE:** See the setup diagram that came with your computer. **NOTE:** The appearance of your setup diagram may vary.
• How to set up my computer	vostro™ Setting Up Your Computer

What Are You Looking For?	Find It Here
• Service Tag and Express Service Code • Microsoft Windows License Label	**Service Tag and Microsoft® Windows® License** **NOTE:** Your computer's Service Tag and Microsoft® Windows® License labels are located on your computer. Your computer's Service Tag contains both a Service Tag number and an Express Service Code. • Use the Service Tag to identify your computer when you use **support.dell.com** or contact support. • Enter the Express Service Code to direct your call when contacting support. • Use the product key on the License Label if you need to reinstall your operating system. **NOTE:** As an increased security measure, the newly designed Microsoft Windows license label incorporates a missing portion or "hole" to discourage removal of the label.

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What Are You Looking For?	Find It Here
• Solutions — Troubleshooting hints and tips, articles from technicians, online courses, and frequently asked questions • Community — Online discussion with other Dell customers • Upgrades — Upgrade information for components, such as memory, the hard drive, and the operating system • Customer Care — Contact information, service call and order status, warranty, and repair information • Service and support — Service call status and support history, service contract, and online discussions with technical support • Dell Technical Update Service — Proactive e-mail notification of software and hardware updates for your computer • Reference — Computer documentation, details on my computer configuration, product specifications, and white papers • Downloads — Certified drivers, patches, and software updates	**Dell Support Website — support.dell.com** **NOTE:** Select your region or business segment to view the appropriate support site.
• Notebook System Software (NSS)— If you reinstall the operating system for your computer, you should also reinstall the NSS utility. NSS provides critical updates for your operating system and support for processors, optical drives, USB devices, and so on. NSS is necessary for correct operation of your Dell computer. The software automatically detects your computer and operating system and installs the updates appropriate for your configuration.	To download NSS System Software: **1** Go to **support.dell.com** and click Drivers & Downloads. **2** Enter your Service Tag or Product Type and Product Model, and click **Go**. **3** Scroll to **System and Configuration Utilities → Dell Notebook System Software** and click **Download Now**. **4** Select **Drivers & Downloads** and click **Go**. **NOTE:** The **support.dell.com** user interface may vary depending on your selections.

What Are You Looking For?	Find It Here
• Software upgrades and troubleshooting hints — Frequently asked questions, hot topics, and general health of your computing environment	**Dell Support Utility** The Dell Support Utility is an automated upgrade and notification system installed on your computer. This support provides real-time health scans of your computing environment, software updates, and relevant self-support information. Access the Dell Support Utility from the icon in the taskbar. For more information, see "Dell Support Utility" on page 98
• How to find information about my computer and its components • How to connect to the Internet • How to add user accounts for different people • How to transfer files and settings from another computer	**Windows Welcome Center** The Windows Welcome Center automatically appears when you use the computer for the first time. You can choose to have it appear every time you start your computer by placing a check in the **Run at startup** checkbox. Another method of accessing the Welcome Center is to click the Windows Vista Start button , and then click **Welcome Center.**

What Are You Looking For?	Find It Here
• How to use Microsoft Windows XP or Windows Vista™ • How to work with programs and files • How to personalize my desktop	**Windows Help and Support** *Microsoft Windows XP:* **1** Click the **Start** button and click **Help and Support**. **2** Either select one of the topics listed, or type a word or phrase that describes your problem into the **Search** box, click the arrow icon, and then click the topic that describes your problem. **3** Follow the instructions on the screen. *Microsoft Windows Vista:* **1** Click the Windows Vista Start button , and then click **Help and Support**. **2** In *Search Help*, type a word or phrase that describes your problem, and then press <Enter> or click the magnifying glass. **3** Click the topic that describes your problem. **4** Follow the instructions on the screen.
• How to reinstall my operating system	**Operating System Media** The operating system is already installed on your computer. To reinstall your operating system, use the *Operating System* media. See "Restoring Your Operating System" on page 110."

What Are You Looking For?	Find It Here
	After you reinstall your operating system, use the *Drivers and Utilities* media to reinstall drivers for the devices that came with your computer.
	Your operating system product key label is located on your computer.
	NOTE: The color of your CD varies based on the operating system you ordered.

About Your Computer

Front View

1	left array microphone (optional with camera)	2	camera (optional)

3	right array microphone (optional with camera)	4	display
5	media control buttons	6	keyboard status lights
7	keyboard	8	fingerprint reader
9	touch pad	10	touch pad buttons
11	speaker	12	device status lights
13	power button		

MICROPHONE — The built-in microphone allows you to communicate without connecting an external microphone.

CAMERA — The built-in camera features a 2.0 mega pixel CMOS web camera.

DISPLAY — For more information about your display, see "Using the Display" on page 43.

MEDIA CONTROL BUTTONS — Press these buttons to adjust the volume. Press <Fn> and the right-arrow key to toggle on and off these lights for illumination of the keyboard in low-light environments.

KEYBOARD STATUS LIGHTS
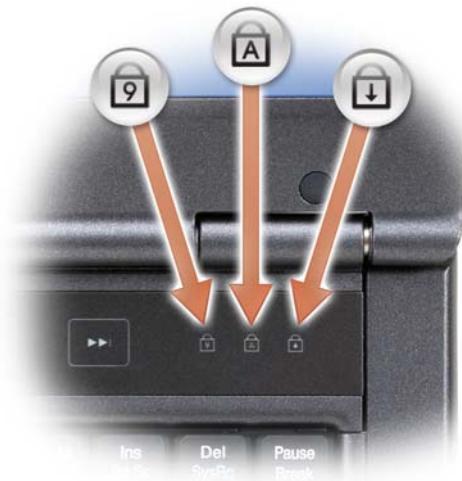
The green lights located above the keyboard indicate the following:

⑨	Turns on when the numeric keypad is enabled.
Ⓐ	Turns on when the uppercase letter function is enabled.
⇩	Turns on when the scroll lock function is enabled.

KEYBOARD — The keyboard includes a numeric keypad as well as the Windows logo key. For information on supported keyboard shortcuts, see "Key Combinations" on page 40.

FINGERPRINT READER (OPTIONAL) — Helps to keep your Dell™ computer secure. When you slide your finger over the reader, it uses your unique fingerprint to authenticate your user identity. For more information on the fingerprint reader, see "Fingerprint Reader (Optional)" on page 70.

TOUCH PAD — Provides the functionality of a mouse (see "Touch Pad" on page 41).

TOUCH PAD BUTTONS — Use these buttons much like the buttons on a mouse when using the touch pad to move the cursor on the display (see "Touch Pad" on page 41).

SPEAKER — To adjust the volume of the integrated speaker, press the volume control buttons, mute button, or volume-control keyboard shortcuts (see "Key Combinations" on page 40).
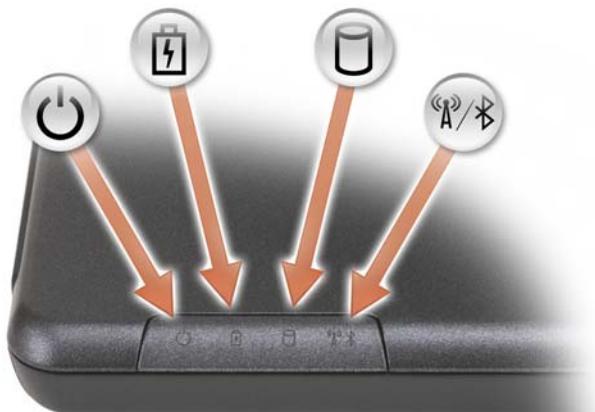
⏻ Turns on when you turn on the computer and blinks when the computer is in a power management mode.

🔋 Turns on steadily or blinks to indicate battery charge status.

🗄 Turns on when the computer reads or writes data.

> **NOTICE:** To avoid loss of data, never turn off the computer while the 🗄 light is flashing.

✳ Turns on when Bluetooth® wireless technology is enabled.

> **NOTE:** Bluetooth wireless technology is an optional feature on your computer, so the ✳ icon turns on only if you ordered Bluetooth wireless technology with your computer. For more information, see the documentation that came with your Bluetooth wireless technology.

If the computer is connected to an electrical outlet, the 🔋 light operates as follows:

– Solid blue: The battery is fully-charged.
– Flashing amber: The battery is charging.

If the computer is running on a battery, the 🔋 light operates as follows:

– Solid blue: The battery is fully-charged.
– Solid amber: The battery is in low battery state.

POWER BUTTON — Press the power button to turn on the computer or exit a power management mode (see "Power Management Modes" on page 33).

NOTICE: To avoid losing data, turn off your computer by performing a Microsoft® Windows® operating system shutdown rather than by pressing the power button.

If the computer stops responding, press and hold the power button until the computer turns off completely (which may take several seconds).

Left Side View

1	USB connectors (2)	2	optical drive
3	eject button	4	54mm ExpressCard slot (wireless)
5	3-in-1 memory card reader		

USB CONNECTOR — Interfaces between the computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners, and printers).

OPTICAL DRIVE — Supports a floppy or an optical drive, second battery, second hard drive, or a Dell TravelLite™ module (see "Using Multimedia" on page 49).

EJECT BUTTON — Ejects media in the optical drive.

EXPRESSCARD SLOT — Supports one ExpressCard (with a PCMIA adapter). The computer ships with a blank installed in the slot to prevent foreign matter from entering the computer interior when a card is not installed (see "ExpressCards" on page 63).

3-IN-1 MEMORY CARD READER — 3-in-1 Card Reader. Supports the following card types: SD, MMC, MS, MS Pro, MS Duo), including SDHC.

Right Side View
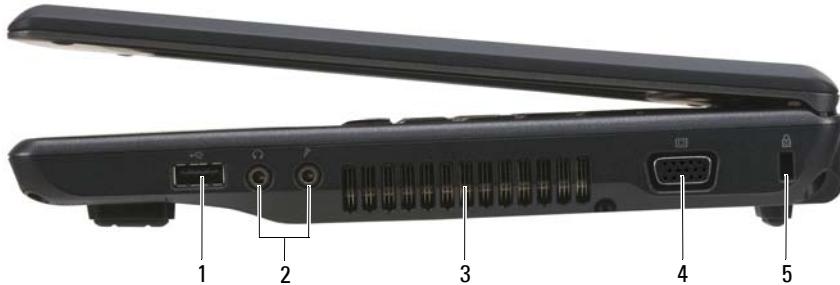
1	USB connector	2	audio connectors
3	air vent	4	video connector (VGA)
5	security cable slot		

USB CONNECTOR — Interfaces between the computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners, and printers).

AUDIO CONNECTORS

Attach headphones to the ⌒ connector.
Attach a microphone to the ⌘ connector.

AIR VENTS — The computer uses an internal fan to create airflow through the vents, which prevents the computer from overheating.

⚠ **CAUTION: Do not block, push objects into, or allow dust to accumulate in the air vents. While it is running, do not store your Dell computer in a low-airflow environment, such as a closed briefcase. Restricting the airflow can damage the computer or cause a fire.The computer turns on the fan when the computer gets hot. Fan noise is normal and does not indicate a problem with the fan or the computer.**

VIDEO CONNECTOR

	Connects video devices, such as a monitor.
IOI	

SECURITY CABLE SLOT — Lets you attach a commercially available antitheft device to the computer (see "Security Cable Lock" on page 67).

Back View

1	AC adapter connector	2	modem connector (RJ-11)
3	network connector (RJ-45)		

AC ADAPTER CONNECTOR

	Connects an AC adapter to the computer.
===	

The AC adapter converts AC power to the DC power required by the computer. You can connect the AC adapter with your computer turned either on or off.

⚠ **CAUTION: The AC adapter works with electrical outlets worldwide. However, power connectors and power strips vary among countries. Using an incompatible cable or improperly connecting the cable to the power strip or electrical outlet may cause fire or equipment damage.**

✦ **NOTICE:** When you disconnect the AC adapter cable from the computer, grasp the connector, not the cable itself, and pull firmly but gently to avoid damaging the cable. When you wrap the AC adapter cable, ensure that you follow the angle of the connector on the AC adapter to avoid damaging the cable.

MODEM CONNECTOR (RJ-11)

For information on using the modem, see the online modem documentation supplied with your computer.

NETWORK CONNECTOR (RJ-45)
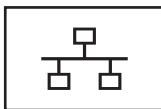
Connects the computer to a network. The two lights next to the connector indicate status and activity for wired network connections.

For information on using the network adapter, see the device user's guide supplied with your computer.

NOTICE: The network connector is slightly larger than the modem connector. To avoid damaging the computer, do not plug a telephone line into the network connector.

Bottom View
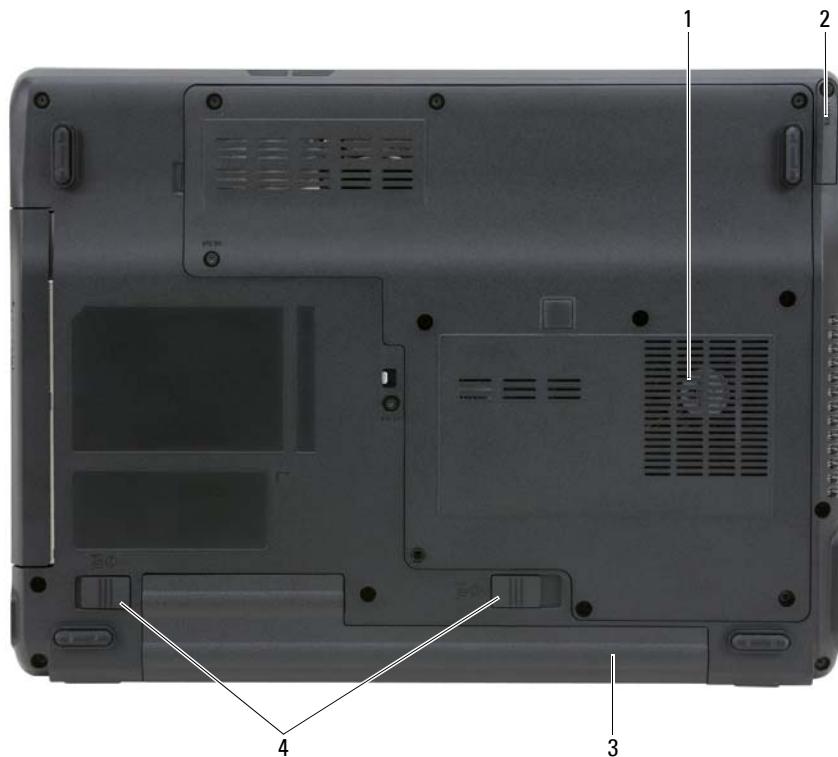
1	air vents	2	cover for optional internal card with Bluetooth® wireless technology
3	battery	4	battery-bay latch release (2)

COVER FOR OPTIONAL INTERNAL CARD WITH BLUETOOTH® WIRELESS TECHNOLOGY — For more information, see the documentation that came with your card. To quickly enable or disable all wireless devices, press <Fn><F2>.

AIR VENTS — The computer uses an internal fan to create airflow through the fan air vents, preventing the computer from overheating.

⚠ **CAUTION: Do not block, push objects into, or allow dust to accumulate in the air vents. Do not store your computer in a low-airflow environment, such as a closed briefcase, while it is running. Restricting the airflow can damage the computer or cause a fire.**

BATTERY — When a battery is installed, you can use the computer without connecting the computer to an electrical outlet (see "Using a Battery" on page 31).

BATTERY-BAY LATCH RELEASES — Release the battery (see "Removing the Battery" on page 36).

3

Using a Battery

Battery Performance

NOTE: For information about the Dell warranty for your computer, see the *Product Information Guide* or separate paper warranty document that shipped with your computer.

For optimal computer performance and to help preserve BIOS settings, operate your Dell™ portable computer with the main battery installed at all times. One battery is supplied as standard equipment in the battery bay.

NOTE: Because the battery may not be fully charged, use the AC adapter to connect your new computer to an electrical outlet the first time you use the computer. For best results, operate the computer with the AC adapter until the battery is fully charged. To view battery charge status, check the Power Meter in Power Options (see "Accessing Power Options Properties" on page 35).

Battery operating time varies depending on operating conditions.

NOTE: Battery operating time (the time the battery can hold a charge) decreases over time. Depending on how often the battery is used and the conditions under which it is used, you may need to purchase a new battery during the life of your computer.

NOTE: It is recommended that you connect your computer to an electrical outlet when writing to a CD or DVD.

Operating time is significantly reduced when you perform operations including, but not limited to, the following:

- Using optical drives.
- Using wireless communications devices, PC Cards, ExpressCards, media memory cards, or USB devices.
- Using high-brightness display settings, 3D screen savers, or other power-intensive programs such as complex 3D graphics applications.

- Running the computer in maximum performance mode. See "Configuring Power Management Settings" on page 35 for information about accessing Windows Power Options Properties which you can use to configure power management settings.

You can check the battery charge before you insert the battery into the computer. You can also set power management options to alert you when the battery charge is low.

⚠ **CAUTION: Using an incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell. The battery is designed to work with your Dell computer. Do not use a battery from other computers with your computer.**

⚠ **CAUTION: Do not dispose of batteries with household waste. When your battery no longer holds a charge, call your local waste disposal or environmental agency for advice on disposing of a lithium-ion battery. See "Battery Disposal" in the** *Product Information Guide*.

⚠ **CAUTION: Misuse of the battery may increase the risk of fire or chemical burn. Do not puncture, incinerate, disassemble, or expose the battery to temperatures above 65°C (149°F). Keep the battery away from children. Handle damaged or leaking batteries with extreme care. Damaged batteries may leak and cause personal injury or equipment damage.**

Checking the Battery Charge

The Microsoft Windows **Power Meter** window and 🔋 icon, the battery charge gauge and health gauge, and the low-battery warning provide information on the battery charge.

Microsoft® Windows® Power Meter

The Windows Power Meter indicates the remaining battery charge. To check the Power Meter, double-click the 🔋 icon on the taskbar.

If the computer is connected to an electrical outlet, a 🔌 icon appears.

Low-Battery Warning

⊘ **NOTICE:** To avoid losing or corrupting data, save your work immediately after a low-battery warning. Then connect the computer to an electrical outlet. If the battery runs completely out of power, hibernate mode begins automatically.

A pop-up window warns you when the battery charge is approximately
90 percent depleted. If two batteries are installed, the low-battery warning
means that the combined charge of both batteries is approximately
90 percent depleted. The computer enters hibernate mode when the battery
charge is at a critically low level.

You can change the settings for the battery alarms in the **Power Options
Properties** window. See "Configuring Power Management Settings" on
page 35 for information about accessing the **Power Options Properties**
window.

Conserving Battery Power

Perform the following actions to conserve battery power:

- Connect the computer to an electrical outlet when possible since battery
  life is largely determined by the number of times the battery is used and
  recharged.

- Place the computer in standby mode or hibernate mode when leaving the
  computer unattended for long periods of time (see "Power Management
  Modes" on page 33).

- Use the **Power Options Properties** window to select options to optimize
  your computer's power usage. These options can also be set to change
  when you press the power button, close the display, or press <Fn><Esc>.

✎ **NOTE:** See "Configuring Power Management Settings" on page 35 for information
on conserving battery power.

Power Management Modes

Standby and Sleep Mode

Standby mode (sleep mode in Microsoft Windows Vista™) conserves power
by turning off the display and the hard drive after a predetermined period of
inactivity (a time-out). When the computer exits standby or sleep mode, it
returns to the same operating state it was in before entering standby or sleep
mode.

⊘ **NOTICE:** If your computer loses AC and battery power while in standby or sleep
mode, it may lose data.

To enter standby mode in Windows XP, click the **Start** button, click **Turn off computer**, and then click **Stand by**.

To enter sleep mode in Windows Vista, click the Windows Vista Start button , and then click S**leep**.

Depending on how you set the power management options in the **Power Options Properties** window, you may also use one of the following methods:

- Press the power button.
- Close the display.
- Press <Fn><Esc>.

To exit standby or sleep mode, press the power button or open the display, depending on how you set the power management options. You cannot make the computer exit standby or sleep mode by pressing a key.

Hibernate Mode

Hibernate mode conserves power by copying system data to a reserved area on the hard drive and then completely turning off the computer. When the computer exits hibernate mode, it returns to the same operating state it was in before entering hibernate mode.

 NOTICE: You cannot remove devices or undock your computer while your computer is in hibernate mode.

Your computer enters hibernate mode if the battery charge level becomes critically low.

To manually enter hibernate mode in Windows XP, click the **Start** button, click **Turn off computer**, press and hold <Shift>, and then click **Hibernate**.

To manually enter hibernate mode in Windows Vista, click the Windows Vista Start button , and then click **Hibernate**.

Depending on how you set the power management options in the **Power Options Properties** window, you may also use one of the following methods to enter hibernate mode:

- Press the power button.
- Close the display.
- Press <Fn><F1>.

34 │ Using a Battery

To exit hibernate mode, press the power button. The computer may take a short time to exit hibernate mode. You cannot make the computer exit hibernate mode by pressing a key or touching the touch pad. For more information on hibernate mode, see the documentation that came with your operating system.

Configuring Power Management Settings

You can use the Windows Power Options Properties to configure the power management settings on your computer.

Accessing Power Options Properties

Windows XP

Click the **Start** button, point to **Control Panel**→ **Performance and Maintenance**, and then click **Power Options**

Windows Vista

Click the Windows Vista Start button , click **Control Panel**, click **System and Maintenance**, and then click **Power Options**.

Charging the Battery

When you connect the computer to an electrical outlet or install a battery while the computer is connected to an electrical outlet, the computer checks the battery charge and temperature. If necessary, the AC adapter then charges the battery and maintains the battery charge.

> **NOTE:** If the battery is hot from being used in your computer or being in a hot environment, the battery may not charge when you connect the computer to an electrical outlet.

The battery is too hot to start charging if the light flashes alternately green and orange. Disconnect the computer from the electrical outlet and allow the computer and the battery to cool to room temperature. Then connect the computer to an electrical outlet to continue charging the battery.

For information about resolving problems with a battery, see "Power Problems" on page 91.

Removing the Battery

⚠️ **CAUTION: Using an incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell. The battery is designed to work with your Dell™ computer. Do not use a battery from other computers with your computer.**

⚠️ **CAUTION: Before performing these procedures, turn off the computer, disconnect the AC adapter from the electrical outlet and the computer, disconnect the modem from the wall connector and computer, and remove any other external cables from the computer.**

🛑 **NOTICE:** You must remove all external cables from the computer to avoid possible connector damage.

To remove the battery:

1 If the computer is connected to a docking device (docked), undock it. See the documentation that came with your docking device for instructions.

2 Ensure that the computer is turned off.

3 Slide the battery-bay latch on the bottom of the computer, and release.

4 Slide the battery-bay latch release closest to the side of the computer, and then remove the battery from the bay.

5 To replace the battery, follow the removal procedure in reverse order.

Storing a Battery

Remove the battery when you store your computer for an extended period of time. A battery discharges during prolonged storage. After a long storage period, recharge the battery fully (see "Charging the Battery" on page 35) before using it.

4

Using the Keyboard

Numeric Keypad
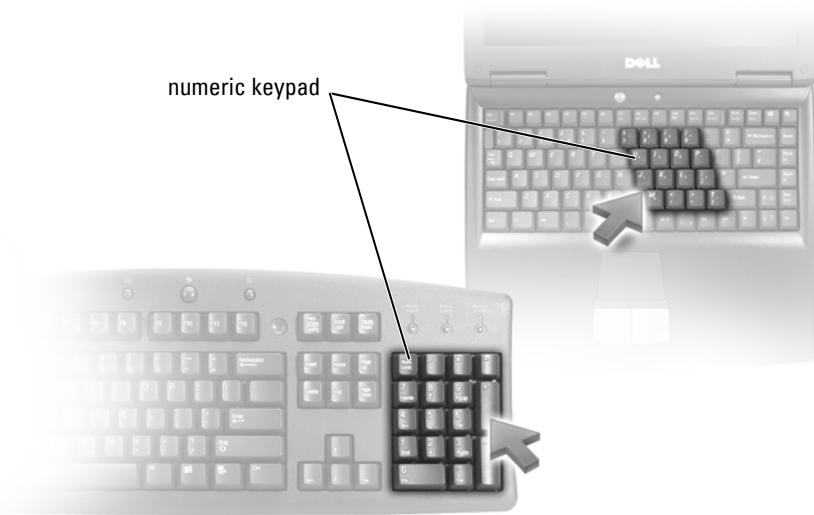
numeric keypad

The numeric keypad functions like the numeric keypad on an external keyboard. Each key on the keypad has multiple functions. The keypad numbers and symbols are marked in blue on the right of the keypad keys. To type a number or symbol, hold down <Fn> and press the desired key.

*   To enable the keypad, press <Num Lk>. The   light indicates that the keypad is active.
*   To disable the keypad, press <Num Lk> again.

Key Combinations

System Functions

<Ctrl><Shift><Esc>	Opens the **Task Manager** window.

Power Management

<Fn><Esc>	Activates a power management mode. You can reprogram this keyboard shortcut to activate a different power management mode using the **Advanced** tab in the **Power Options Properties** window (see "Accessing Power Options Properties" on page 35).

Speaker Functions

<Fn><Page Up>	Increases the volume of the integrated speakers and external speakers, if attached.
<Fn><Page Dn>	Decreases the volume of the integrated speakers and external speakers, if attached.
<Fn><End>	Enables and disables the integrated speakers and external speakers, if attached.

Microsoft® Windows® Logo Key Functions

Windows logo key and <m>	Minimizes all open windows
Windows logo key and <Shift><m>	Restores all minimized windows. This key combination functions as a toggle to restore minimized windows following the use of the Windows logo key and <m> key combination.
Windows logo key and <e>	Runs Windows Explorer.

Windows logo key and <r>	Opens the **Run** dialog box.
Windows logo key and <f>	Opens the **Search Results** dialog box.
Windows logo key and <Ctrl><f>	Opens the **Search Results-Computer** dialog box (if the computer is connected to a network).
Windows logo key and <Pause>	Opens the **System Properties** dialog box.

To adjust keyboard operation, such as the character repeat rate, open the Control Panel, click **Printers and Other Hardware**, and click **Keyboard**. For information about the Control Panel, see the Windows Help and Support Center. To access the Help and Support Center, click **Start**→ **Help and Support.**

Touch Pad

The touch pad detects the pressure and movement of your finger to allow you to move the cursor on the display. Use the touch pad and touch pad buttons as you would use a mouse.

1	touch pad	2	silk screen depicting scrolling capabilities

To move the cursor, lightly slide your finger over the touch pad.

- To select an object, lightly tap once on the surface of the touch pad or use your thumb to press the left touch-pad button.

- To select and move (or drag) an object, position the cursor on the object and tap twice on the touch pad. On the second tap, leave your finger on the touch pad and move the selected object by sliding your finger over the surface.

- To double-click an object, position the cursor on the object and tap twice on the touch pad or use your thumb to press the left touch-pad button twice.

Customizing the Touch Pad

You can use the **Mouse Properties** window to disable the touch pad and adjust settings.

1 Open the Control Panel, and then click **Mouse**. For information about the Control Panel, see the Windows Help and Support Center. To access the Help and Support Center, click **Start→ Help and Support.**

2 In the **Mouse Properties** window:

- Click the **Device Select** tab to disable the touch pad and track stick.

- Click the **Touch Pad** tab to adjust touch pad and track stick settings.

3 Click **OK** to save the settings and close the window.

5

Using the Display

Adjusting Brightness

When a Dell™ computer is running on battery power, you can conserve power by setting the display brightness to the lowest comfortable setting by pressing <Fn> and the up- or down-arrow key on the keyboard.

NOTE: Brightness key combinations only affect the display on your portable computer, not monitors or projectors that you attach to your portable computer or docking device. If your computer is connected to an external monitor and you try to change the brightness level, the Brightness Meter may appear, but the brightness level on the external device does not change.

You can press the following keys to adjust display brightness:

- Press <Fn> and the up-arrow key to increase brightness on the integrated display only (not on an external monitor).
- Press <Fn> and the down-arrow key to decrease brightness on the integrated display only (not on an external monitor).

Using a Projector

When you start the computer with an external device (such as an external monitor or projector) attached and turned on, the image may appear on either the computer display or the external device.

Press <Fn><F8> to switch the video image between the display only, the external device only, or the display and the external device simultaneously.

Making Images and Text Look Bigger or Sharper

NOTE: If you change the display resolution from the current settings, the image may appear blurry or text may be hard to read if you change the resolution to one not supported by your computer and display. Before you change any of the display settings, make a note of the current settings so you can change back to the previous settings if you need to.

You can enhance the legibility of text and change the appearance of images on the screen by adjusting display resolution. As you increase resolution, items appear smaller on the screen. In contrast, lower resolution causes text and images to appear larger and can benefit people with vision impairments. To display a program at a specific resolution, both the video card and the display must support the program, and the necessary video drivers must be installed.

NOTE: Use only the Dell-installed video drivers, which are designed to offer the best performance with your Dell-installed operating system.

If you choose a resolution or color palette that is higher than the display supports, the settings adjust automatically to the closest supported values.

To set the display resolution and refresh rate for your display, perform the steps in the following section that corresponds to the operating system your computer is using.

Microsoft® Windows® XP

1. Click **Start**→ **Settings**→ **Control Panel**.
2. Under **Pick a category**, click **Appearance and Themes**.
3. Under **Pick a task...**, click the area you want to change, or under **or pick a Control Panel icon**, click **Display**.
4. In the **Display Properties** window, click the **Settings** tab.
5. Try different settings for **Color quality** and **Screen resolution**.

NOTE: As the resolution increases, icons and text appear smaller on the screen.

Windows Vista™

1. Click the Windows Vista Start button , and click **Control Panel**.
2. Under **Appearance and Personalization**, click **Adjust screen resolution**.

3 In the **Display Settings** window, under **Resolution**, slide the slide bar to the left/right to decrease/increase the screen resolution.

4 Click **How do I get the best display?** for further instructions.

If the video resolution setting is higher than that supported by the display, the computer enters pan mode. In pan mode, the entire video image cannot be displayed at one time, and the taskbar that usually appears at the bottom of the desktop may no longer be visible. To view the parts of the video image that are not visible, you can use the touch pad or track stick to "pan" (or *move*) the image up, down, left, and right.

NOTICE: You can damage an external monitor by using an unsupported refresh rate. Before adjusting the refresh rate on an external monitor, see the user's guide for the monitor.

Using Both a Monitor and Your Computer Display

You can attach an external monitor or projector to your computer and use it as an extension of your display (known as "dual independent display" or "extended desktop" mode). This mode allows you to use both screens independently and drag objects from one screen to the other, effectively doubling the amount of viewable work space.

To use extended desktop mode, perform the steps in the following section that corresponds to the operating system your computer is using.

Microsoft® Windows® XP

1 Connect the external monitor, TV, or projector to the computer.

2 Click **Start**→ **Settings**→ **Control Panel**.

3 Under **Pick a category**, click **Appearance and Themes**.

4 Under **Pick a task...**, click the area you want to change, or under **or pick a Control Panel icon**, click **Display**.

5 In the **Display Properties** window, click the **Settings** tab.

NOTE: If you choose a resolution or color palette that is higher than the display supports, the settings adjust automatically to the closest supported values. For more information, see your operating system documentation.

6 Click the monitor 2 icon, click the **Extend my Windows desktop...** check box, and then click **Apply**.

7 Change **Screen Area** to the appropriate sizes for both displays and click **Apply**.

8 If prompted to restart the computer, click **Apply the new color setting without restarting** and click **OK**.

9 If prompted, click **OK** to resize your desktop.

10 If prompted, click **Yes** to keep the settings.

11 Click **OK** to close the **Display Properties** window.

To disable dual independent display mode:

1 Click the **Settings** tab in the **Display Properties** window.

2 Click the monitor 2 icon, uncheck the **Extend my Windows desktop onto this monitor** option, and then click **Apply**.

If necessary, press <Fn><F8> to bring the screen image back to the computer display.

Windows Vista™

1 Click the Windows Vista Start button , and click **Control Panel**.

2 Under **Appearance and Personalization**, click **Adjust screen resolution**.

3 In the **Display Settings** window, click the monitor 2 icon, click the **Extend the desktop onto this monitor** check box, and then click **Apply**.

4 Click **OK** to close the **Display Settings** window.

To disable extended desktop mode:

1 In the **Display Settings** window, click the **Settings** tab.

2 Click the monitor 2 icon, uncheck the **Extend the desktop onto this monitor** option, and then click **Apply**.

Using a Monitor as Your Primary Display

To swap your primary and secondary display designations (for example, to use your external monitor as your primary display after docking), perform the steps in the following section that corresponds to the operating system your computer is using.

Microsoft® Windows® XP

1 Click the **Start** button and click **Control Panel**.

2 Under **Pick a category**, click **Appearance and Themes**.

3 Under **Pick a task...**, click the area you want to change, or under **or pick a Control Panel icon**, click **Display**.

4 Click the **Settings** tab→ **Advanced**→ **Displays** tab.

See the documentation that came with your video card for additional information.

Windows Vista™

1 Click the Windows Vista Start button , and click **Control Panel**.

2 Under **Appearance and Personalization**, click **Adjust screen resolution**.

3 In the **Display Settings** window, click the monitor 2 icon, click the **This is my main monitor** check box, and then click **Apply**.

4 Click **OK** to close the **Display Settings** window.

6

Using Multimedia

Playing CDs or DVDs

NOTICE: Do not press down on the CD/DVD tray when you open or close it. Keep the tray closed when you are not using the drive.

NOTICE: Do not move the computer while playing CDs or DVDs.

1 Press the eject button on the front of the drive.

2 Pull out the tray.

3 Place the disc, label side up, in the center of the tray and snap the disc onto the spindle.

NOTE: If you use a module that shipped with another computer, you need to install the drivers and software necessary to play DVDs or write data. For more information, see the *Drivers and Utilities* CD (the *Drivers and Utilities* CD is optional and may not be available for your computer or in certain countries).

4 Push the tray back into the drive.

To format CDs for storing data, to create music CDs, or to copy CDs, see the CD software that came with your computer.

NOTE: Ensure that you follow all copyright laws when you create CDs.

A CD player includes the following basic buttons:

▶	Play.
◀◀	Move backward within the current track.
❚❚	Pause.
▶▶	Move forward within the current track.
■	Stop.
◀◀❚	Go to the previous track.
▲	Eject.
❚▶▶	Go to the next track.

A DVD player includes the following basic buttons:

■	Stop.
↩	Restart the current chapter.
▶	Play.
▶▶	Fast forward.
❚❚	Pause.
◀◀	Fast reverse.
❚▶	Advance a single frame while in pause mode.
❚▶▶	Go to the next title or chapter.
⟳	Continuously play the current title or chapter.

| ⏮ | Go to the previous title or chapter. |
| ⏏ | Eject. |

For more information on playing CDs or DVDs, click **Help** on the CD or DVD player (if available).

Copying CDs and DVDs

> **NOTE:** Ensure that you observe all copyright laws when creating CDs or DVDs.

This section applies only to computers that have a CD-RW, DVD+/-RW, or CD-RW/DVD (combo) drive.

> **NOTE:** The types of CD or DVD drives offered by Dell may vary by country.

The following instructions explain how to make an exact copy of a CD or DVD using Roxio Creator Plus - Dell Edition. You can also use Roxio Creator Plus for other purposes, such as creating music CDs from audio files stored on your computer or backing up important data. For help, open Roxio Creator Plus, and then click the question mark icon in the upper-right corner of the window.

How to Copy a CD or DVD

> **NOTE:** CD-RW/DVD combo drives cannot write to DVD media. If you have a CD-RW/DVD combo drive and you experience recording problems, check for available software patches on the Sonic support website at **sonic.com**.

The DVD-writable drives installed in Dell™ computers can write to and read DVD+/-R, DVD+/-RW and DVD+R DL (dual layer) media, but cannot write to and may not read DVD-RAM or DVD-R DL media.

> **NOTE:** Most commercial DVDs have copyright protection and cannot be copied using Roxio Creator Plus.

1 Open Roxio Creator Plus.

2 Under the **Copy** tab, click **Disc Copy**.

3 To copy the CD or DVD:

- *If you have one CD/DVD drive*, ensure that the settings are correct, and then click **Disc Copy**. The computer reads your source CD or DVD and copies the data to a temporary folder on your computer hard drive.

  When prompted, insert a blank CD or DVD into the drive and click **OK**.

- *If you have two CD/DVD drives*, select the drive into which you have inserted your source CD or DVD, and then click **Disc Copy**. The computer copies the data from the source CD or DVD to the blank CD or DVD.

Once you have finished copying the source CD or DVD, the CD or DVD that you have created automatically ejects.

Using Blank CDs and DVDs

CD-RW drives can write to CD recording media only (including high-speed CD-RW media) while DVD-writable drives can write to both CD and DVD recording media.

Use blank CD-Rs to record music or permanently store data files. After the maximum storage capacity of a CD-R is reached, you cannot write to that CD-R again (see the Sonic documentation for more information). Use blank CD-RWs if you plan to erase, rewrite, or update information on the CD later.

Blank DVD+/-Rs can be used to permanently store large amounts of data. After you create a DVD+/-R disc, you may not be able to write to that disc again if the disc is *finalized* or *closed* during the final stage of the disc creation process. Use blank DVD+/-RWs if you plan to erase, rewrite, or update information on the disc later.

CD-Writable Drives

Media Type	Read	Write	Rewritable
CD-R	Yes	Yes	No
CD-RW	Yes	Yes	Yes

DVD-Writable Drives

Media Type	Read	Write	Rewritable
CD-R	Yes	Yes	No
CD-RW	Yes	Yes	Yes
DVD+R	Yes	Yes	No
DVD-R	Yes	Yes	No
DVD+RW	Yes	Yes	Yes
DVD-RW	Yes	Yes	Yes
DVD+R DL	Yes	Yes	No
DVD-R DL	Maybe	No	No
DVD-RAM	Maybe	No	No

Helpful Tips

- Use Microsoft® Windows® Explorer to drag and drop files to a CD-R or CD-RW only after you start Roxio Creator Plus and open a Creator project.

- Use CD-Rs to burn music CDs that you want to play in regular stereos. CD-RWs may not play in many home or car stereos.

- You cannot create audio DVDs with Roxio Creator Plus.

- Music MP3 files can be played only on MP3 players or on computers that have MP3 software installed.

- Commercially available DVD players used in home theater systems may not support all available DVD formats. For a list of formats supported by your DVD player, see the documentation provided with your DVD player or contact the manufacturer.

- Do not burn a blank CD-R or CD-RW to its maximum capacity; for example, do not copy a 650-MB file to a blank 650-MB CD. The CD-RW drive needs 1–2 MB of blank space to finalize the recording.

- Use a blank CD-RW to practice CD recording until you are familiar with CD recording techniques. If you make a mistake, you can erase the data on the CD-RW and try again. You can also use blank CD-RWs to test music file projects before you record the project permanently to a blank CD-R.

- See the Sonic website at **sonic.com** for additional information.

Adjusting the Volume

📝 **NOTE:** When the speakers are muted, you do not hear the CD or DVD playing.

1 Select **Start**→ **Programs**→ **Accessories**→ **Entertainment**→ **Volume Control**.

2 Click and drag the bar in the **Volume Control** column and slide it up or down to increase or decrease the volume.

For more information on volume control options, click **Help** in the **Volume Control** window.

Adjusting the Picture

If an error message notifies you that the current resolution and color depth are using too much memory and preventing DVD playback, adjust the display properties.

Microsoft Windows XP

1 Click **Start**→ **Control Panel**→ **Appearance and Themes**.

2 Under **Pick a task...**, click **Change the screen resolution**.

3 Under **Screen resolution**, click and drag the bar to reduce the resolution setting.

4 In the drop-down menu under **Color quality**, click **Medium (16 bit)** and click **OK**.

Microsoft Windows Vista™ Operating System

1 Click the Windows Vista Start button 🪟**,** click **Control Panel**, and then click **Appearance and Personalization**.

2 Under **Personalization**, click **Adjust Screen Resolution**.

The **Display Properties** window appears.

3 Under **Resolution:** click and drag the bar reduce the resolution setting.

4 In the drop-down menu under **Colors:**, click **Medium (16 bit)**.

5 Click **OK**.

7

Setting Up and Using Networks

Setting up a computer network provides connectivity between your computer and the Internet, another computer, or a network. For example, with a network set up in a home or small office you can print to a shared printer, access drives and files on another computer, browse other networks, or access the Internet. You can set up a local area network (LAN) using a network or broadband modem cable or set up a wireless LAN (WLAN).

The Microsoft Windows® XP and Microsoft Windows Vista™ operating systems provide wizards to help guide you through the process of networking computers. For more information about Networking, see the Windows Help and Support Center (see "Windows Help and Support" on page 16).

Connecting a Network or Broadband Modem Cable

Before you connect your computer to a network, the computer must have a network adapter installed and a network cable connected to it.

1 Connect the network cable to the network adapter connector on the back of your computer.

   NOTE: Insert the cable connector until it clicks into place, and then gently pull the cable to ensure that it is securely attached.

2 Connect the other end of the network cable to a network connection device or a network wall connector.

   NOTE: Do not use a network cable with a telephone wall connector.

Setting Up a Network in the Microsoft® Windows® XP Operating System

1 Click **Start**→ **All Programs**→ **Accessories**→ **Communications**→ **Network Setup Wizard**→ **Next**→ **Checklist for creating a network**.

> ✎ **NOTE:** Selecting the connection method labeled **This computer connects directly to the Internet** enables the integrated firewall provided with Windows XP Service Pack 2 (SP2).

2 Complete the checklist.

3 Return to the Network Setup Wizard and follow the instructions in the wizard.

Setting Up a Network in the Microsoft Windows Vista™ Operating System

1 Click the Windows Vista Start button 🟦, and then click **Connect To**→ **Set up a connection or network**.

2 Select an option under **Choose a connection option**.

3 Click **Next**, and then follow the instructions in the wizard.

Wireless Local Area Network (WLAN)

A WLAN is a series of interconnected computers that communicate with each other over the air waves rather than through a network cable connected to each computer. In a WLAN, a radio communications device called an access point or wireless router connects network computers and provides Internet, or network, access. The access point or wireless router and the wireless network card in the computer communicate by broadcasting data from their antennas over the air waves.

What You Need to Establish a WLAN Connection

Before you can set up a WLAN, you need:

- High-speed (broadband) Internet access (such as cable or DSL)
- A broadband modem that is connected and working
- A wireless router or access point
- A wireless network card for each computer that you want to connect to your WLAN
- A network cable with a network (RJ-45) connector

Checking Your Wireless Network Card

Depending on what you selected when you purchased your computer, the computer has a variety of configurations. To confirm that your computer has a wireless network card and to determine the type of card, use one of the following:

- The **Start** button and the **Connect To** option
- The order confirmation for your computer

Start Button and Connect To Option

In Microsoft Windows XP, click **Start**→ **Connect To**→ **Show all connections**.

> 🖉 **NOTE:** If your computer is set to the **Classic Start** menu option, click **Start**→ **Settings**→ **Network Connections** to view your network connections.

In Microsoft Windows Vista, click → **Connect To**→ **View network computers and devices**.

If Wireless Network Connection does not appear under LAN or High-Speed Internet, you may not have a wireless network card.

If Wireless Network Connection appears, you have a wireless network card. To view detailed information about the wireless network card:

1 Right-click **Wireless Network Connection**.

2 Click **Properties**.

The **Wireless Network Connection Properties** window appears. The wireless network card's name and model number are listed on the **General** tab.

> **NOTE:** If **Wireless Network Connection** does not appear, you may not have a wireless network card.

The Order Confirmation for Your Computer

The order confirmation that you received when you ordered your computer lists the hardware and software that shipped with your computer.

Setting Up a New WLAN Using a Wireless Router and a Broadband Modem

1 Contact your Internet service provider (ISP) to obtain specific information about the connection requirements for your broadband modem.

2 Ensure that you have wired Internet access through your broadband modem before you attempt to set up a wireless Internet connection (see "Connecting a Network or Broadband Modem Cable" on page 55).

3 Install any software required for your wireless router. Your wireless router may have been shipped with an installation CD. Installation CDs usually contain installation and troubleshooting information. Install the required software according to the instructions provided by the router manufacturer.

4 Shut down your computer and any other wireless-enabled computers in the vicinity through the **Start** or menu.

5 Disconnect your broadband modem power cable from the electrical outlet.

6 Disconnect the network cable from the computer and the modem.

7 Disconnect the AC adapter cable from your wireless router to ensure that there is no power connected to the router.

✏ **NOTE:** Wait for a minimum of 5 minutes after disconnecting your broadband modem before you continue with the network setup.

8 Insert a network cable into the network (RJ-45) connector on the unpowered broadband modem.

9 Connect the other end of the network cable into the Internet network (RJ-45) connector on the unpowered wireless router.

10 Ensure that no network or USB cables, other than the network cable connecting the modem and the wireless router, are connected to the broadband modem.

✏ **NOTE:** Restart your wireless equipment in the order described below to prevent a potential connection failure.

11 Turn on *only* your broadband modem and wait for at least 2 minutes for the broadband modem to stabilize. After 2 minutes, proceed to step 12.

12 Turn on your wireless router and wait for at least 2 minutes for the wireless router to stabilize. After 2 minutes, proceed to the step 13.

13 Start your computer and wait until the boot process completes.

14 See the documentation that came with your wireless router to do the following in order to set up the wireless router:

- Establish communication between your computer and your wireless router.
- Configure your wireless router to communicate with your broadband router.
- Find out your wireless router's broadcast name. The technical term for the name of your router's broadcast name is Service Set Identifier (SSID) or network name.

15 If necessary, configure your wireless network card to connect to the wireless network (see "Connecting to a WLAN" on page 59).

Connecting to a WLAN

✏ **NOTE:** Before you connect to a WLAN, ensure that you have followed the instructions in "Wireless Local Area Network (WLAN)" on page 57.

🖊 **NOTE:** The following networking instructions do not apply to internal cards with Bluetooth® wireless technology or cellular products.

This section provides general procedures for connecting to a network using wireless technology. Specific network names and configuration details vary. See "Wireless Local Area Network (WLAN)" on page 57 for more information about how to prepare for connecting your computer to a WLAN.

Your wireless network card requires specific software and drivers for connecting to a network. The software is already installed.

🖊 **NOTE:** If the software is removed or corrupted, follow the instructions in the user documentation for your wireless network card. Verify the type of wireless network card installed in your computer and then search for that name on the Dell™ Support website at **support.dell.com**. For information on the type of wireless network card that is installed in your computer, see "Checking Your Wireless Network Card" on page 57.

Determining the Wireless Network Device Manager

Depending on the software installed on your computer, different wireless configuration utilities may manage your network devices:

- Your wireless network card's client utility
- The Windows XP or Windows Vista operating system

To determine which wireless configuration utility is managing your wireless network card in Windows XP:

1 Click **Start**→ **Settings**→ **Control Panel**→ **Network Connections**.

2 Right-click the **Wireless Network Connection** icon, and then click **View Available Wireless Networks**.

If the **Choose a wireless network** window states **Windows cannot configure this connection**, the wireless network card's client utility is managing the wireless network card.

If the **Choose a wireless network** window states **Click an item in the list below to connect to a wireless network in range or to get more information**, the Windows XP operating system is managing the wireless network card.

To determine which wireless configuration utility is managing your wireless network card in Windows Vista:

1 Click 🟦 → **Connect To**→ **Manage wireless networks**.

2 Double-click a profile to open the wireless network properties screen.

For specific information about the wireless configuration utility installed on your computer, see your wireless network documentation in the Windows Help and Support Center (see "Windows Help and Support" on page 16).

Completing the Connection to the WLAN

When you turn on your computer and a network (for which your computer is not configured) is detected in the area, a pop-up appears near the network icon in the notification area (in the lower-right corner of the Windows desktop).

Follow the instructions provided in any utility prompts that appear on your screen.

Once you have configured your computer for the wireless network that you selected, another pop-up notifies you that your computer is connected to that network.

Thereafter, whenever you log on to your computer within the range of the wireless network that you selected, the same pop-up notifies you of the wireless network connection.

NOTE: If you select a secure network, you must enter a WEP or WPA key when prompted. Network security settings are unique to your network. Dell cannot provide this information.

NOTE: Your computer can take up to 1 minute to connect to the network.

Microsoft® Windows® Firewall

Windows Firewall provides basic protection from unauthorized access to your computer while it is connected to the Internet. Windows Firewall is automatically enabled when you run the Network Setup Wizard.

When Windows Firewall is enabled for a network connection, the firewall icon appears with a red background in the **Network Connections** section of the Control Panel.

NOTE: Enabling Windows Firewall does not reduce the need for virus-checking software.

For more information, click **Start**→ **Control Panel**→ **Security**→ **Windows Firewall**, or see "Windows Help and Support" on page 16."

8

Using Cards

ExpressCards

ExpressCards provide additional memory, wired and wireless communications, multimedia and security features. ExpressCards support two form factors:

*   ExpressCard/54 (54 mm wide in an L-shape with a 34 mm connector)

The 54 mm card only fits into a 54 mm card slot.

See "Specifications" on page 131 for information on supported ExpressCards.

NOTE: An ExpressCard is not a bootable device.
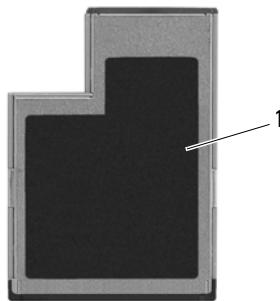
1   ExpressCard/54

ExpressCard Blanks

Your computer shipped with a plastic blank installed in the ExpressCard slot. Blanks protect unused slots from dust and other particles. Save the blank for use when no ExpressCard is installed in the slot; blanks from other computers may not fit your computer.

Remove the blank before installing an ExpressCard. To remove the blank, (see "Removing an ExpressCard or Blank" on page 65).

Installing an ExpressCard

You can install an ExpressCard while the computer is running. The computer automatically detects the card.

ExpressCards are generally marked with a symbol (such as a triangle or an arrow) or a label to indicate which end to insert into the slot. The cards are keyed to prevent incorrect insertion. If card orientation is not clear, see the documentation that came with the card.

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

To install an ExpressCard:

1 Hold the card with the top side of the card facing up.

2 Slide the card into the slot until the card is completely seated in its connector.

   If you encounter too much resistance, do not force the card. Check the card orientation and try again.

| 1 | slot | 2 | ExpressCard |

The computer recognizes the ExpressCard and automatically loads the appropriate device driver. If the configuration program tells you to load the manufacturer's drivers, use the floppy disk or CD that came with the ExpressCard.

Removing an ExpressCard or Blank

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

Press the release latch and remove the card or blank. For some release latches, you must press the latch twice: once to pop the latch out, and then a second time to pop the card out.

Save a blank to use when no ExpressCard is installed in a slot. Blanks protect unused slots from dust and other particles.

| 1 | slot | 2 | ExpressCard |

9

Securing Your Computer

Security Cable Lock

NOTE: Your computer does not ship with a security cable lock.

A security cable lock is a commercially available antitheft device. To use the lock, attach it to the security cable slot on your Dell™ computer. For more information, see the instructions included with the device.

NOTICE: Before you buy an antitheft device, ensure that it will work with the security cable slot on your computer.

Passwords

About Passwords

NOTE: Passwords are disabled when you receive your computer.

A primary (or system) password and an administrator password prevent unauthorized access to your computer in different ways. The following table identifies types and features of passwords available on your computer.

Type of Password	Features
Primary (or system)	• Protects the computer from unauthorized access
Administrator	• Gives system administrators or service technicians access to computers for repair or reconfiguration
	• Allows you to restrict access to system setup in the same way a primary password restricts access to the computer
	• Can be used instead of the primary password

NOTE: Some hard drives do not support hard drive passwords.

NOTICE: Passwords provide a high level of security for data in your computer or hard drive. However, they are not foolproof. If you require more security, obtain and use additional forms of protection, such as smart cards, data encryption programs, or PC Cards with encryption features.

When using passwords, observe the following guidelines:

• Choose passwords that you can remember, but not ones that are easy to guess. For example, do not use the names of family members or pets for passwords.

• It is recommended that you do not write down passwords. If you do write it down, however, ensure that the password is stored in a secure place.

• Do not share passwords with other people.

• Ensure that people are not watching you when you type your password(s).

If you forget any of your passwords, contact Dell (see "Contacting Dell" on page 129). For your protection, Dell technical support staff will ask you for proof of your identity to ensure that only an authorized person can use the computer.

Using a Primary (or System) Password

The primary password allows you to protect the computer from unauthorized access.

When you first start your computer, you must assign a primary password at the prompt.

If you do not enter a password within two minutes, the computer returns to its previous operating state.

NOTICE: If you disable the administrator password, the primary password is also disabled.

To add or change passwords, access **User Accounts** from the **Control Panel**.

If you have assigned an administrator password, you can use it instead of the primary password. The computer does not specifically prompt you for the administrator password.

Using an Administrator Password

The administrator password is designed to give system administrators or service technicians access to computers for repair or reconfiguration. The administrators or technicians can assign identical administrator passwords to groups of computers, allowing you to assign a unique primary password.

To set or change administrator passwords, access **User Accounts** from the Control Panel.

When you set an administrator password, the **Configure Setup** option becomes available in system setup. The **Configure Setup** option allows you to restrict access to system setup in the same way that a primary password restricts access to the computer.

The administrator password can be used instead of the primary password. Whenever you are prompted to enter the primary password, you can enter the administrator password.

NOTICE: If you disable the administrator password, the primary password is also disabled.

NOTE: The administrator password provides access to the computer, but it does not provide access to the hard drive when a hard drive password is assigned.

If you forget the primary password and do not have an administrator password assigned, or if you have both a primary and an administrator password assigned but forget them both, contact your system administrator or contact Dell (see "Contacting Dell" on page 129).

Computer Tracking Software

Computer tracking software may enable you to locate your computer if it is lost or stolen. The software is optional and may be purchased when you order your Dell™ computer, or you can contact your Dell sales representative for information about this security feature.

NOTE: Computer tracking software may not be available in certain countries.

NOTE: If you have computer tracking software and your computer is lost or stolen, you must contact the company that provides the tracking service to report the missing computer.

Fingerprint Reader (Optional)

If your computer has the optional fingerprint reader, you can use the Fingerprint Reader Suite to add biometric security to your computer. The Fingerprint Reader Suite gives you the ability to enhance your security in the following ways:

- Associate digitized images of your fingerprints with your user name, password, and generated security keys in your own secure passport
- Use the fingerprint reader to manage OS-level authentication
- Register applications and web pages in a password bank so that you can use the fingerprint reader to enter your password
- Launch a favorite application by swiping your finger over the fingerprint reader
- Store confidential information in an encrypted folder

If Your Computer Is Lost or Stolen

- Call a law enforcement agency to report the lost or stolen computer. Include the Service Tag in your description of the computer. Ask that a case number be assigned and write down the number, along with the name, address, and phone number of the law enforcement agency. If possible, obtain the name of the investigating officer.

NOTE: If you know where the computer was lost or stolen, call a law enforcement agency in that area. If you do not know, call a law enforcement agency where you live.

- If the computer belongs to a company, notify the security office of the company.
- Contact Dell customer service to report the missing computer. Provide the computer Service Tag, the case number, and the name, address, and phone number of the law enforcement agency to which you reported the missing computer. If possible, give the name of the investigating officer.

The Dell customer service representative will log your report under the computer Service Tag and record the computer as missing or stolen. If someone calls Dell for technical assistance and gives your Service Tag, the computer is identified automatically as missing or stolen. The representative will attempt to get the phone number and address of the caller. Dell will then contact the law enforcement agency to which you reported the missing computer.

10

Troubleshooting Tools

Diagnostic Lights

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

Your computer has three keyboard status lights located above the keyboard (see "Front View" on page 19). During normal operation, the keyboard status lights display the current status (*on* or *off*) of the Num Lock, Caps Lock, and Scroll Lock features. If the computer starts without error, the lights flash, and then turn off. If the computer malfunctions, however, you can use the status of the lights to help identify the problem.

📝 **NOTE:** After the computer completes POST, the Num Lock light may remain on, depending on your BIOS settings (see "Commonly Used Options" on page 102).

Diagnostic Light Codes During POST

To troubleshoot a problem with your computer, read the sequence of the keyboard status lights in order from left to right (Num Lock, Caps Lock, and then Scroll Lock). If the computer malfunctions the individual lights display a status of either *On* ⬤, *Off* ◎, or *Flashing* ✳.

Light Pattern	Problem Description	Suggested Resolution
◎◎⬤	The microcontroller is handing control of the system to the Pentium controller. If no processor is installed, or there is no FWH/ROM, this code persists.	• Reseat the processor (see your *Service Manual*). • If the problem persists, contact Dell (see "Contacting Dell" on page 129).

Light Pattern	Problem Description	Suggested Resolution
◎●●	Memory subsystem configuration activity is in progress or a memory failure was detected.	• If available, install working memory of the same type into your computer (see your *Service Manual*). • If the problem persists, contact Dell (see "Contacting Dell" on page 129).
◎◎☀	The system is in flash recovery mode.	Contact Dell (see "Contacting Dell" on page 129).
☀◎◎	No LCD panel detected or LCD self-test failure occurred.	• Reseat the LCD cable (see your *Service Manual*). • If the problem persists, contact Dell (see "Contacting Dell" on page 129).
☀◎☀	EEPROM SPD data indicates all SODIMMS are unusable.	• If available, install working memory of the same type into your computer (see your *Service Manual*). • If the problem persists, contact Dell (see "Contacting Dell" on page 129).

System Messages

> **NOTE:** If the message you received is not listed in the table, see the documentation for either the operating system or the program that was running when the message appeared.

CMOS FAILURE — Possible system board failure or the RTC battery is low. Press <F1> to load defaults.

DECREASING AVAILABLE MEMORY — See "Lockups and Software Problems" on page 88.

ERROR 8602 – AUXILLIARY DEVICE FAILURE VERIFY THAT MOUSE AND KEYBOARD ARE SECURELY ATTACHED TO CORRECT CONNECTORS.

FLASH PART WRITE PROTECTED ERROR — Contact Dell (see "Contacting Dell" on page 129).

GATE A20 FAILURE — See "Lockups and Software Problems" on page 88.

INVALID CONFIGURATION INFORMATION - PLEASE RUN SETUP PROGRAM — Enter System Setup (see "Viewing the System Setup Screens" on page 102) and change System Setup options (see "Commonly Used Options" on page 102) to correct the configuration error.

KEYBOARD FAILURE — Keyboard failure or keyboard cable loose (see "Lockups and Software Problems" on page 88).

MEMORY ADDRESS LINE FAILURE AT (ADDRESS), READ VALUE EXPECTING (VALUE) — See "Lockups and Software Problems" on page 88.

MEMORY DOUBLE WORD LOGIC FAILURE AT (ADDRESS), READ VALUE EXPECTING (VALUE) — See "Lockups and Software Problems" on page 88.

MEMORY ODD/EVEN LOGIC FAILURE AT (ADDRESS) READ VALUE EXPECTING (VALUE) — See "Lockups and Software Problems" on page 88.

MEMORY WRITE/READ FAILURE AT (ADDRESS), READ VALUE EXPECTING (VALUE) — See "Lockups and Software Problems" on page 88.

MEMORY SIZE IN CMOS INVALID — See "Lockups and Software Problems" on page 88.

NO BOOT DEVICE AVAILABLE – STRIKE F1 TO RETRY BOOT, F2 FOR SETUP UTILITY. PRESS F5 TO RUN ONBOARD DIAGNOSTICS — The system cannot detect a bootable device or partition.

- If the floppy drive is your boot device, ensure that the drive is installed properly and that a bootable floppy disk is in the drive.
- If the hard drive is your boot device, ensure that the drive is installed properly and partitioned as a boot device.
- Enter System Setup and ensure that the boot sequence information is correct (see "Viewing the System Setup Screens" on page 102).

NO BOOT SECTOR ON HARD-DISK DRIVE — Enter System Setup and ensure that the configuration information for the hard drive is correct (see "Viewing the System Setup Screens" on page 102).

NO TIMER TICK INTERRUPT — Run the Dell Diagnostics (see "Dell Diagnostics" on page 79).

NON-SYSTEM DISK OR DISK ERROR — Replace the floppy disk with one that has a bootable operating system or remove the floppy disk and restart the computer.

NOT A BOOT DISKETTE — Insert a bootable floppy disk and restart your computer.

POWER WARNING MESSAGES HAVE BEEN DISABLED. RUN THE SETUP UTILITY TO ENABLE THESE MESSAGES. — See "System Setup Program" on page 101.

READ FAILURE ON INTERNAL HARD DRIVE — See your *Service Manual* for more information.

THE AC POWER ADAPTER WATTAGE AND TYPE CANNOT BE DETERMINED. THE BATTERY MAY NOT CHARGE. THEY SYSTEM WILL ADJUST THE PERFORMANCE TO MATCH THE POWER AVAILABLE. PLEASE CONNECT A DELL AC ADAPTER OR GREATER FOR BEST SYSTEM PERFORMANCE (SEE THE SPECIFICATIONS FOR YOUR AC ADAPTER AT "AC ADAPTER" ON PAGE 134). STRIKE THE F3 KEY (BEFORE THE F1 OR F2 KEY) IF YOU DO NOT WANT TO SEE POWER WARNING MESSAGES AGAIN. STRIKE THE F1 KEY TO CONTINUE, F2 TO RUN THE SETUP UTILITY. — Connect the correct AC adapter to the computer or docking station.

THE COMPUTER IS DOCKED AND ONLY BATTERY POWER IS DETECTED. THIS CAN HAPPEN IF THE POWER ADAPTER IS MISSING, THE POWER CORD IS UNPLUGGED, OR THE COMPUTER IS NOT PROPERLY CONNECTED TO THE DOCKING STATION. YOU SHOULD UNDOCK, REDOCK, ATTACH THE POWER ADAPTER, OR PLUG IN THE POWER CORD. STRIKE THE F1 KEY TO SHUTDOWN.

THE AMOUNT OF SYSTEM MEMORY HAS CHANGED. IF YOU DID NOT CHANGE YOUR MEMORY... TO RESOLVE THIS ISSUE, TRY TO RESEAT THE MEMORY. STRIKE THE F1 KEY TO CONTINUE, F2 TO RUN THE SETUP UTILITY. PRESS F5 TO RUN ONBOARD DIAGNOSTICS. —

- Reseat the memory (see "Memory" in your *Service Manual*).

- If memory was not removed or installed, memory module or system board failure may have occurred. Contact Dell for assistance (see "Contacting Dell" on page 129).

UNSUPPORTED MEMORY. STRIKE THE F1 KEY TO SHUTDOWN. — Ensure that the memory you are using is supported by your computer (see your *Service Manual*).

WARNING: A xxx-W AC ADAPTER HAS BEEN DETECTED, WHICH IS LESS THAN THE RECOMMENDED 65/90-W AC ADAPTER ORIGINALLY SHIPPED. THIS WILL INCREASE THE TIME TO CHARGE THE BATTERY. THEY SYSTEM WILL ADJUST THE PERFORMANCE TO MATCH THE POWER AVAILABLE. PLEASE CONNECT A DELL 65/90-W AC ADAPTER OR GREATER FOR BEST PERFORMANCE. STRIKE THE F3 KEY (BEFORE THE F1 OR F2 KEY) IF YOU DO NOT WANT TO SEE POWER WARNING MESSAGES AGAIN. STRIKE THE F1 KEY TO CONTINUE, F2 TO RUN THE SETUP UTILITY. — Connect the correct AC adapter to the computer or docking station.

WARNING: THE PRIMARY BATTERY CANNOT BE IDENTIFIED. THIS SYSTEM WILL BE UNABLE TO CHARGE BATTERIES UNTIL THIS BATTERY IS REMOVED. — For computers with two batteries installed, the primary battery may be installed incorrectly, or the battery or system board may be defective.

WARNING: THE SECOND BATTERY CANNOT BE IDENTIFIED. THIS SYSTEM WILL BE UNABLE TO CHARGE BATTERIES UNTIL THIS BATTERY IS REMOVED. — For computers with two batteries installed, the secondary battery may be installed incorrectly, or the battery or system board may be defective.

WARNING: THE BATTERIES CANNOT BE IDENTIFIED. THIS SYSTEM WILL BE UNABLE TO CHARGE BATTERIES UNTIL THIS BATTERY IS REMOVED. — For computers with two batteries installed, one or more of the batteries may be installed incorrectly, or the batteries or system board may be defective.

WARNING: THE BATTERY CANNOT BE IDENTIFIED. THIS SYSTEM WILL BE UNABLE TO CHARGE THIS BATTERY. — The battery may be installed incorrectly, or the battery or system board may be defective.

WARNING: THE BATTERY ATTACHED CANNOT POWER THE SYSTEM. THE SYSTEM WILL NOT BOOT WITH THIS BATTERY PLUGGED IN. PRESS F1 TO SHUTDOWN THE SYSTEM.

WARNING! BATTERY IS CRITICALLY LOW. HIT F1 TO CONTINUE.

WARNING MESSAGES HAVE BEEN DISABLED. RUN THE SETUP UTILITY TO ENABLE THESE MESSAGES. — See "System Setup Program" on page 101.

WARNING: DELL'S DISK MONITORING SYSTEM HAS DETECTED THAT DRIVE [0/1] ON THE [PRIMARY/SECONDARY] EIDE CONTROLLER IS OPERATING OUTSIDE OF NORMAL SPECIFICATIONS. IT IS ADVISABLE TO IMMEDIATELY BACK UP YOUR DATA AND REPLACE YOUR HARD DRIVE BY CALLING YOUR SUPPORT DESK OR DELL. — Contact Dell for assistance (see "Contacting Dell" on page 129).

YOUR POWER ADAPTER DOES NOT SUPPLY ENOUGH POWER TO RUN THE ATTACHED DOCKING STATION. EITHER UNDOCK OR INSERT AN APPROPRIATE ADAPTER. STRIKE THE F1 KEY TO SHUTDOWN. — Connect the correct AC adapter.

YOUR SYSTEM IS DOCKED, BUT THE AC ADAPTER TYPE CANNOT BE DETERMINED. EITHER UNDOCK OR INSERT AN APPROPRIATE ADAPTER. STRIKE THE F1 KEY TO SHUTDOWN. — The AC adapter may be installed incorrectly, or the AC adapter or docking station may be defective.

YOUR SYSTEM AUTOMATICALLY POWER OFF BECAUSE IT BECAME WARMER THAN
EXPECTED. THIS MAY HAVE BEEN CAUSED BY: OPERATING OR STORING THE SYSTEM
IN AN ENVIRONMENT WHERE THE AMBIENT TEMPERATURE IS TOO HIGH, OR
OBSTRUCTING THE AIR FLOW FROM THE SYSTEM FAN VENTS. IF THE PROBLEM
RECURS, PLEASE CALL DELL SUPPORT WITH ERROR CODE #M1004. — Contact
Dell for assistance (see "Contacting Dell" on page 129).

PROCESSOR SSDT DATA NOT FOUND OPERATING SYSTEM POWER
MANAGEMENT FOR MULTI CORE PROCESSORS WILL BE DISABLED. —

UL CIRCUIT TRIPPED THE UL TRIP COUNT IS SHOWN BELOW THE F3-KEY
MESSAGE. STRIKE THE F3 KEY TO CLEAR THE UL COUNTER, ANY OTHER KEY TO
CONTINUE. — Run the Dell Diagnostics (see "Dell Diagnostics" on page 79).

PROCESSOR MICROCODE UPDATE FAILURE THE REVISION OF PROCESSOR IN
THE SYSTEM IS NOT SUPPORTED. — Ensure that the processor you are using is
supported by your computer (see "Specifications" on page 131).

Hardware Troubleshooter

If a device is either not detected during the operating system setup or is
detected, but incorrectly configured, you can use the Hardware
Troubleshooter to resolve the incompatibility.

Windows XP:

1 Click **Start→ Help and Support**.

2 Type `hardware troubleshooter` in the search field and press
   <Enter> to start the search.

3 In the **Fix a Problem** section, click **Hardware Troubleshooter**.

4 In the **Hardware Troubleshooter** list, select the option that best describes
   the problem and click **Next** to follow the remaining troubleshooting steps.

Windows Vista:

1 Click the Windows Vista start button 🪟, and click **Help and Support.**

2 Type `hardware troubleshooter` in the search field and press
   <Enter> to start the search.

3 In the search results, select the option that best describes the problem and
   follow the remaining troubleshooting steps.

Dell Diagnostics

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions located in the *Product Information Guide*.**

When to Use the Dell Diagnostics

If you experience a problem with your computer, perform the checks in "Troubleshooting" on page 85, and then run the Dell Diagnostics before contacting Dell for assistance.

Start the Dell Diagnostics from your hard drive or from the *Drivers and Utilities* media provided with your computer.

📝 **NOTE:** The *Drivers and Utilities* media is optional and may not ship with your computer.

📝 **NOTE:** The Dell Diagnostics only operate on Dell computers.

Starting the Dell Diagnostics From Your Hard Drive

Before running the Dell Diagnostics, enter System Setup (see "Viewing the System Setup Screens" on page 102) to review your computer's configuration information, and ensure that the device you want to test is displayed in System Setup and is active.

The Dell Diagnostics is located on a separate diagnostic utility partition on your hard drive.

📝 **NOTE:** If the computer is connected to a docking device (docked), undock it. See the documentation that came with your docking device for instructions.

📝 **NOTE:** If your computer does not display a screen image contact Dell (see "Contacting Dell" on page 129).

1 Ensure that the computer is connected to an electrical outlet that is known to be working properly.

2 Press and hold the <Fn> key or the mute button then turn on your computer.

   📝 **NOTE:** Alternatively, you can select **Diagnostics** from the one-time boot menu at startup to boot to the diagnostic utility partition and run the Dell Diagnostics (see "Changing the Boot Sequence" on page 102).

The computer runs the Pre-boot System Assessment (PSA), a series of initial tests of your system board, keyboard, display, memory, hard drive, etc.

- During the assessment, answer any questions that appear.
- If failures are detected during the PSA, write down the error code(s) and see "Contacting Dell" on page 129.
- If the PSA completes successfully, the following message appears: "`Booting Dell Diagnostic Utility Partition. Press any key to continue.`"

🖉 **NOTE:** If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from your *Drivers and Utilities* media (see "Starting the Dell Diagnostics From the Drivers and Utilities Media" on page 81).

3 Press any key to start the Dell Diagnostics from the diagnostics utility partition on your hard drive.

4 Press <Tab> to select **Test System** and then press <Enter>.

🖉 **NOTE:** It is recommended that you select **Test System** to run a complete test on your computer. Selecting **Test Memory** initiates the extended memory test, which can take up to thirty minutes or more to complete. When the test completes, record the test results and then press any key to return to the previous menu.

5 At the Dell Diagnostics Main Menu, left-click with the touch pad/mouse, or press <Tab> and then <Enter>, to select the test you want to run (see "Dell Diagnostics Main Menu" on page 82).

🖉 **NOTE:** Write down any error codes and problem descriptions exactly as they appear and follow the instructions on the screen.

6 After all tests have completed, close the test window to return to the Dell Diagnostics Main Menu.

7 Close the Main Menu window to exit the Dell Diagnostics and restart the computer.

Starting the Dell Diagnostics From the Drivers and Utilities Media

Before running the Dell Diagnostics, enter System Setup (see "Viewing the System Setup Screens" on page 102) to review your computer's configuration information, and ensure that the device you want to test is displayed in System Setup and is active.

1 Insert the *Drivers and Utilities* media into the optical drive.

2 Restart your computer.

3 When the DELL logo appears, press <F12> immediately.

> *✎* **NOTE:** Keyboard failure may result when a key is held down for extended periods of time. To avoid possible keyboard failure, press and release <F12> in even intervals to open the Boot Device Menu.

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

4 When the boot device list appears, use the up- or down- arrow keys to highlight **CD/DVD/CD-RW Drive** then press <Enter>.

> *✎* **NOTE:** Using the one-time boot menu changes the boot sequence for the current boot only. Upon restart, the computer boots according to the boot sequence specified in System Setup.

5 Press any key to confirm that you want to start from the CD/DVD.

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

6 Type 1 to **Run the 32 Bit Dell Diagnostics**.

7 At the **Dell Diagnostics Menu**, type 1 to select **Dell 32-bit Diagnostics for Resource CD (graphical user interface)**.

8 Press <Tab> to select **Test System** and then press <Enter>.

> *✎* **NOTE:** It is recommended that you select Test System to run a complete test on your computer. Selecting Test Memory initiates the extended memory test, which can take up to thirty minutes or more to complete. When the test completes, record the test results and then press any key to return to the previous menu.

9 At the Dell Diagnostics Main Menu, left-click with the mouse, or press <Tab> and then <Enter>, to select the test you want to run (see "Dell Diagnostics Main Menu" on page 82).

> **NOTE:** Write down any error codes and problem descriptions exactly as they appear and follow the instructions on the screen.

10 After all tests have completed, close the test window to return to the Dell Diagnostics Main Menu.

11 Close the Main Menu window to exit the Dell Diagnostics and restart the computer.

12 Remove the *Drivers and Utilities* media from the optical drive.

Dell Diagnostics Main Menu

After the Dell Diagnostics loads the following menu appears:

Option	Function
Test Memory	Run the stand-alone memory test
Test System	Run system diagnostics
Exit	Exit the diagnostics

Press <Tab> to select the test you want to run and then press <Enter>.

> **NOTE:** It is recommended that you select **Test System** to run a complete test on your computer. Selecting **Test Memory** initiates the extended memory test, which can take up to thirty minutes or more to complete. When the test completes, record the test results and then press any key to return to this menu.

After **Test System** is selected, the following menu appears:

Option	Function
Express Test	Performs a quick test of devices in the system. This typically can take 10 to 20 minutes.
	NOTE: The Express Test requires no interaction on your part. Run Express Test first to increase the possibility of tracing a problem quickly.

Option	Function
Extended Test	Performs a thorough check of devices in the system. This typically can take an hour or more. **NOTE:** The Extended Test periodically requires your input to answer specific questions.
Custom Test	Use to test a specific device or customize the tests to be run.
Symptom Tree	This option allows you to select tests based on a symptom of the problem you are having. This option lists the most common symptoms.

NOTE: It is recommended that you select **Extended Test** to perform a more thorough check of devices in the computer.

For any problem encountered during a test, a message appears with an error code and a description of the problem. Write down the error code and problem description exactly as it appears and follow the instructions on the screen. If you cannot resolve the problem, contact Dell (see "Contacting Dell" on page 112).

NOTE: When contacting Dell support, have your Service Tag ready. The Service Tag for your computer is located at the top of each test screen.

The following tabs provide additional information for tests run from the Custom Test or Symptom Tree option:

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and the problem description.
Help	Describes the test and any requirements for running the test.

Tab	Function
Configuration	Displays the hardware configuration for the selected device.
	The Dell Diagnostics obtains configuration information for all devices from System Setup, memory, and various internal tests, and displays the information in the device list in the left pane of the screen.
	NOTE: The device list may not display the names of all components installed on your computer or all devices attached to your computer.
Parameters	Allows you to customize the test, if applicable, by changing the test settings.

11

Troubleshooting

Follow these tips when troubleshooting your computer:

- If you added or removed a part before the problem started, review the installation procedures and ensure that the part is correctly installed.

- If a peripheral device does not work, ensure that the device is properly connected.

- If an error message appears on the screen, write down the exact message. This message may help support personnel diagnose and fix the problem(s).

- If an error message occurs in a program, see the program's documentation.

NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell™ computer to the Windows Classic view.

Battery Problems

⚠ **CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.**

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

E-Mail, Modem, and Internet Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

NOTE: Connect the modem to an analog telephone jack only. The modem does not operate while it is connected to a digital telephone network.

NOTE: Do not plug a telephone cable into the network adapter connector (see "Back View" on page 25).

CHECK THE MICROSOFT OUTLOOK® EXPRESS SECURITY SETTINGS — If you cannot open your e-mail attachments:

1 In Outlook Express, click **Tools**→ **Options**→ **Security**.

2 Click **Do not allow attachments** to remove the checkmark, as needed.

CHECK THE TELEPHONE LINE CONNECTION
CHECK THE TELEPHONE JACK
CONNECT THE MODEM DIRECTLY TO THE TELEPHONE WALL JACK
USE A DIFFERENT TELEPHONE LINE

- Verify that the telephone line is connected to the jack on the modem (the jack has either a green label or a connector-shaped icon next to it).

- Ensure that you hear a click when you insert the telephone line connector into the modem.

- Disconnect the telephone line from the modem and connect it to a telephone, then listen for a dial tone.

- If you have other telephone devices sharing the line, such as an answering machine, fax machine, surge protector, or line splitter, bypass them and use the telephone to connect the modem directly to the telephone wall jack. If you are using a line that is 3 meters (10 feet) or more in length, try a shorter one.

RUN THE MODEM DIAGNOSTIC TOOL

Windows XP:

1 Click **Start**→ **All Programs**→ **Modem Helper**.

2 Follow the instructions on the screen to identify and resolve modem problems. Modem Helper is not available on certain computers.

Windows Vista:

1 Click **Start** → **All Programs**→ **Modem Diagnostic Tool**.

2 Follow the instructions on the screen to identify and resolve modem problems. Modem diagnostics are not available on all computers.

VERIFY THAT THE MODEM IS COMMUNICATING WITH WINDOWS

Windows XP:

1 Click **Start**→ **Control Panel**→ **Printers and Other Hardware**→ **Phone and Modem Options**→ **Modems**.

2 Click the COM port for your modem→ **Properties**→ **Diagnostics**→ **Query Modem** to verify that the modem is communicating with Windows.

If all commands receive responses, the modem is operating properly.

Windows Vista:

1 Click **Start** → **Control Panel**→ **Hardware and Sound**→ **Phone and Modem Options**→ **Modems**.

2 Click the COM port for your modem→ **Properties** → **Diagnostics**→ **Query Modem** to verify that the modem is communicating with Windows.

If all commands receive responses, the modem is operating properly.

ENSURE THAT YOU ARE CONNECTED TO THE INTERNET — Ensure that you have subscribed to an Internet provider. With the Outlook Express e-mail program open, click **File**. If **Work Offline** has a checkmark next to it, click the checkmark to remove it and connect to the Internet. For help, contact your Internet service provider.

Error Messages

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

If the error message is not listed, see the documentation for the operating system or the program that was running when the message appeared.

A FILENAME CANNOT CONTAIN ANY OF THE FOLLOWING CHARACTERS: \ / : * ? " < > | — Do not use these characters in filenames.

A REQUIRED .DLL FILE WAS NOT FOUND — The program that you are trying to open is missing an essential file. To remove and then reinstall the program:

Windows XP:

1 Click **Start**→ **Control Panel**→ **Add or Remove Programs**→ **Programs and Features**.

2 Select the program you want to remove.

3 Click **Uninstall**.

4 See the program documentation for installation instructions.

Windows Vista:

1 Click **Start** ⊞ → **Control Panel**→ **Programs**→ **Programs and Features**.

2 Select the program you want to remove.

3 Click **Uninstall**.

4 See the program documentation for installation instructions.

***drive letter* :\ IS NOT ACCESSIBLE. THE DEVICE IS NOT READY** — The drive cannot read the disk. Insert a disk into the drive and try again.

INSERT BOOTABLE MEDIA — Insert a bootable floppy disk, CD, or DVD.

NON-SYSTEM DISK ERROR — Remove the floppy disk from the floppy drive and restart your computer.

NOT ENOUGH MEMORY OR RESOURCES. CLOSE SOME PROGRAMS AND TRY AGAIN — Close all windows and open the program that you want to use. In some cases, you may have to restart your computer to restore computer resources. If so, run the program that you want to use first.

OPERATING SYSTEM NOT FOUND — Contact Dell (see "Contacting Dell" on page 129).

Lockups and Software Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

The computer stops responding

🚫 **NOTICE:** You may lose data if you are unable to perform an operating system shutdown.

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds (until the computer turns off), and then restart your computer.

A program stops responding

END THE PROGRAM

1 Press <Ctrl><Shift><Esc> simultaneously to access the Task Manager.

2 Click the **Applications** tab.

3 Click to select the program that is no longer responding.

4 Click **End Task**.

A program crashes repeatedly

📝 **NOTE:** Most software includes installation instructions in its documentation or on a floppy disk, CD, or DVD.

CHECK THE SOFTWARE DOCUMENTATION — If necessary, uninstall and then reinstall the program.

A program is designed for an earlier Windows operating system

RUN THE PROGRAM COMPATIBILITY WIZARD

Windows XP:

The Program Compatibility Wizard configures a program so that it runs in an environment similar to non-XP operating system environments.

1 Click **Start**→ **All Programs**→ **Accessories**→ **Program Compatibility Wizard**→ **Next**.

2 Follow the instructions on the screen.

Windows Vista:

The Program Compatibility Wizard configures a program so that it runs in an environment similar to non-Windows Vista operating system environments.

1 Click **Start** 🟦 → **Control Panel**→ **Programs**→ **Use an older program with this version of Windows.**

2 In the welcome screen, click **Next**.

3 Follow the instructions on the screen.

A solid blue screen appears

TURN THE COMPUTER OFF — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds (until the computer turns off), and then restart your computer.

Other software problems

CHECK THE SOFTWARE DOCUMENTATION OR CONTACT THE SOFTWARE
MANUFACTURER FOR TROUBLESHOOTING INFORMATION

- Ensure that the program is compatible with the operating system installed on your computer.

- Ensure that your computer meets the minimum hardware requirements needed to run the software. See the software documentation for information.

- Ensure that the program is installed and configured properly.

- Verify that the device drivers do not conflict with the program.

- If necessary, uninstall and then reinstall the program.

BACK UP YOUR FILES IMMEDIATELY

USE A VIRUS-SCANNING PROGRAM TO CHECK THE HARD DRIVE, FLOPPY DISKS,
CDS, OR DVDS

SAVE AND CLOSE ANY OPEN FILES OR PROGRAMS AND SHUT DOWN YOUR
COMPUTER THROUGH THE START MENU

Memory Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the
safety instructions in the *Product Information Guide*.**

IF YOU RECEIVE AN INSUFFICIENT MEMORY MESSAGE

- Save and close any open files and exit any open programs you are not using to see if that resolves the problem.

- See the software documentation for minimum memory requirements. If necessary, install additional memory (see your Service Manual).

- Reseat the memory modules (see your Service Manual) to ensure that your computer is successfully communicating with the memory.

- Run the Dell Diagnostics (see "Dell Diagnostics" on page 79).

IF YOU EXPERIENCE OTHER MEMORY PROBLEMS

- Reseat the memory modules (see "Memory" in your Service Manual) to ensure that your computer is successfully communicating with the memory.

- Ensure that you are following the memory installation guidelines (see "Installing Memory" in your Service Manual).
- Ensure that the memory you are using is supported by your computer. For more information about the type of memory supported by your computer, see your Service Manual.
- Run the Dell Diagnostics (see "Dell Diagnostics" on page 79).

Network Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

CHECK THE NETWORK CABLE CONNECTOR — Ensure that the network cable is firmly inserted into the network connector on the back of the computer and the network jack.

CHECK THE NETWORK LIGHTS — If the link integrity light is off (see "Network Connector (RJ-45)" on page 27), no network communication is occurring. Replace the network cable.

RESTART THE COMPUTER AND LOG ON TO THE NETWORK AGAIN

CHECK YOUR NETWORK SETTINGS — Contact your network administrator or the person who set up your network to verify that your network settings are correct and that the network is functioning.

RUN THE HARDWARE TROUBLESHOOTER — See "Hardware and Software Problems" on page 110.

Power Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

IF THE POWER LIGHT IS GREEN AND THE COMPUTER IS NOT RESPONDING — See "Diagnostic Lights" on page 73.

IF THE POWER LIGHT IS BLINKING GREEN — The computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

IF THE POWER LIGHT IS OFF — The computer is either turned off or is not receiving power.

- Reseat the power cable in the power connector on the back of the computer and the electrical outlet.

- Bypass power strips, power extension cables, and other power protection devices to verify that the computer turns on properly.

- Ensure that any power strips being used are plugged into an electrical outlet and are turned on.

- Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

IF THE POWER LIGHT IS BLINKING AMBER — The computer is receiving electrical power, but an internal power problem may exist.

- Ensure that the voltage selection switch is set to match the AC power at your location (if applicable).

IF THE POWER LIGHT IS STEADY AMBER — A device may be malfunctioning or incorrectly installed.

- Remove and then reinstall all memory modules (see your Service Manual).

- Remove and then reinstall any expansion cards (see "Removing an ExpressCard or Blank" on page 65).

ELIMINATE INTERFERENCE — Some possible causes of interference are:

- Power, keyboard, and mouse extension cables

- Too many devices connected to the same power strip

- Multiple power strips connected to the same electrical outlet

Printer Problems

⚠️ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

📝 **NOTE:** If you need technical assistance for your printer, contact the printer's manufacturer.

CHECK THE PRINTER DOCUMENTATION — See the printer documentation for setup and troubleshooting information.

ENSURE THAT THE PRINTER IS TURNED ON

CHECK THE PRINTER CABLE CONNECTIONS

- See the printer documentation for cable connection information.

- Ensure that the printer cables are securely connected to the printer and the computer.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

VERIFY THAT THE PRINTER IS RECOGNIZED BY WINDOWS

Windows XP:

1 Click **Start**→ **Control Panel**→ **Printers and Other Hardware**→ **View installed printers or fax printers**.

2 If the printer is listed, right-click the printer icon.

3 Click **Properties**→ **Ports**. For a parallel printer, ensure that the **Print to the following port(s):** setting is **LPT1 (Printer Port)**. For a USB printer, ensure that the **Print to the following port(s):** setting is **USB**.

Windows Vista:

1 Click **Start** → **Control Panel**→ **Hardware and Sound**→ **Printer**.

2 If the printer is listed, right-click the printer icon.

3 Click **Properties and click Ports**.

4 Adjust the settings, as needed.

REINSTALL THE PRINTER DRIVER — **SEE THE PRINTER DOCUMENTATION FOR INFORMATION ON REINSTALLING THE PRINTER DRIVER.**

Scanner Problems

⚠️ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

📝 **NOTE:** If you need technical assistance for your scanner, contact the scanner's manufacturer.

CHECK THE SCANNER DOCUMENTATION — See the scanner documentation for setup and troubleshooting information.

UNLOCK THE SCANNER — Ensure that your scanner is unlocked (if the scanner has a locking tab or button).

RESTART THE COMPUTER AND TRY THE SCANNER AGAIN

CHECK THE CABLE CONNECTIONS

- See the scanner documentation for information on cable connections.

- Ensure that the scanner cables are securely connected to the scanner and the computer.

VERIFY THAT THE SCANNER IS RECOGNIZED BY MICROSOFT WINDOWS

Windows XP:

1 Click **Start→ Control Panel→ Printers and Other Hardware→ Scanners and Cameras**.

2 If your scanner is listed, Windows recognizes the scanner.

Windows Vista:

1 Click **Start** → **Control Panel→ Hardware and Sound→ Scanners and Cameras**.

2 If the scanner is listed, Windows recognizes the scanner.

REINSTALL THE SCANNER DRIVER — See the scanner documentation for instructions.

Sound and Speaker Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the** *Product Information Guide*.

No sound from speakers

📝 **NOTE:** The volume control in MP3 and other media players may override the Windows volume setting. Always check to ensure that the volume on the media player(s) has not been turned down or off.

CHECK THE SPEAKER CABLE CONNECTIONS — Ensure that the speakers are connected as shown on the setup diagram supplied with the speakers. If you purchased a sound card, ensure that the speakers are connected to the card.

ENSURE THAT THE SUBWOOFER AND THE SPEAKERS ARE TURNED ON — See the setup diagram supplied with the speakers. If your speakers have volume controls, adjust the volume, bass, or treble to eliminate distortion.

ADJUST THE WINDOWS VOLUME CONTROL — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

DISCONNECT HEADPHONES FROM THE HEADPHONE CONNECTOR — Sound from the speakers is automatically disabled when headphones are connected to the computer's front-panel headphone connector.

TEST THE ELECTRICAL OUTLET — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

ELIMINATE POSSIBLE INTERFERENCE — Turn off nearby fans, fluorescent lights, or halogen lamps to check for interference.

RUN THE SPEAKER DIAGNOSTICS

REINSTALL THE SOUND DRIVER — See "Drivers" on page 105.

RUN THE HARDWARE TROUBLESHOOTER — See "Hardware and Software Problems" on page 110.

No sound from headphones

CHECK THE HEADPHONE CABLE CONNECTION — Ensure that the headphone cable is securely inserted into the headphone connector (see "Right Side View" on page 24).

ADJUST THE WINDOWS VOLUME CONTROL — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

Touch Pad or Mouse Problems

CHECK THE TOUCH PAD SETTINGS —

1   Click **Start→ Control Panel→ Printers and Other Hardware→ Mouse**.

2   Try adjusting the settings.

CHECK THE MOUSE CABLE — Shut down the computer. Disconnect the mouse cable, check it for damage, and firmly reconnect the cable.

If you are using a mouse extension cable, disconnect it and connect the mouse directly to the computer.

TO VERIFY THAT THE PROBLEM IS WITH THE MOUSE, CHECK THE TOUCH PAD

1   Shut down the computer.

2   Disconnect the mouse.

3   Turn on the computer.

4   At the Windows desktop, use the touch pad to move the cursor around, select an icon, and open it.

    If the touch pad operates correctly, the mouse may be defective.

CHECK THE SYSTEM SETUP PROGRAM SETTINGS — Verify that the system setup program lists the correct device for the pointing device option. (The computer automatically recognizes a USB mouse without making any setting adjustments.) For more information on using the system setup program, see "System Setup Program" on page 101.

TEST THE MOUSE CONTROLLER — To test the mouse controller (which affects pointer movement) and the operation of the touch pad or mouse buttons, run the Mouse test in the **Pointing Devices** test group in the Dell Diagnostics (see "Dell Diagnostics" on page 79).

REINSTALL THE TOUCH PAD DRIVER — See "Reinstalling Drivers and Utilities" on page 106.

Video and Monitor Problems

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

🚫 **NOTICE:** If your computer came with a PCI graphics card installed, removal of the card is not necessary when installing additional graphics cards; however, the card is required for troubleshooting purposes. If you remove the card, store it in a safe and secure location. For information about your graphics card, go to **support.dell.com.**

The screen is blank

✍ **NOTE:** For troubleshooting procedures, see the monitor's documentation.

The screen is difficult to read

CHECK THE DIAGNOSTIC LIGHTS — See "Diagnostic Lights" on page 73.

CHECK THE MONITOR SETTINGS — See the monitor documentation for instructions on adjusting the contrast and brightness, demagnetizing (degaussing) the monitor, and running the monitor self-test.

ADJUST THE WINDOWS DISPLAY SETTINGS

Windows XP:

1 Click **Start**→ **Control Panel**→ **Appearance and Themes**.

2 Click the area you want to change or click the **Display** icon.

3 Try different settings for **Color quality** and **Screen resolution**.

Windows Vista:

1 Click **Start** → **Control Panel**→ **Hardware and Sound**→ **Personalization**→ **Display Settings**.

2 Adjust **Resolution** and **Colors settings,** as needed.

3D image quality is poor

C HECK THE GRAPHICS CARD POWER CABLE CONNECTION — Ensure that the power cable for the graphics card(s) is correctly attached to the card.

Only part of the display is readable

C ONNECT AN EXTERNAL MONITOR

1 Shut down your computer and connect an external monitor to the computer.

2 Turn on the computer and the monitor and adjust the monitor brightness and contrast controls.

If the external monitor works, the computer display or video controller may be defective. Contact Dell (see "Contacting Dell" on page 129).

Power Lights

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

The power button light located on the front of the computer illuminates and blinks or remains solid to indicate different states:

- If the power light is green and the computer is not responding, see "Diagnostic Lights" on page 73.

- If the power light is blinking green, the computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

- If the power light is off, the computer is either turned off or is not receiving power.

    – Reseat the power cable into both the power connector on the back of the computer and the electrical outlet.

- – If the computer is plugged into a power strip, ensure that the power strip is plugged into an electrical outlet and that the power strip is turned on.
- – Bypass power protection devices, power strips, and power extension cables to verify that the computer turns on properly.
- – Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
- If the power light is blinking amber, the computer is receiving electrical power, but an internal power problem might exist.
  - – Ensure that the voltage selection switch is set to match the AC power at your location, if applicable.
- If the power light is steady amber, a device may be malfunctioning or incorrectly installed.
  - – Remove and then reinstall any cards (see "Using Cards" on page 63).
- Eliminate interference. Some possible causes of interference are:
  - – Too many devices on a power strip
  - – Multiple power strips connected to the same electrical outlet

Dell Technical Update Service

The Dell Technical Update service provides proactive e-mail notification of software and hardware updates for your computer. The service is free and can be customized for content, format, and how frequently you receive notifications.

To enroll for the Dell Technical Update service, go to **support.dell.com/technicalupdate**.

Dell Support Utility

The Dell Support Utility is installed on your computer and available from the Dell Support, , icon on the taskbar or from the **Start** button. Use this support utility for self-support information, software updates, and health scans of your computing environment.

Accessing the Dell Support Utility

Access the Dell Support Utility from the ![icon] icon on the taskbar or from the **Start** menu.

If the Dell Support icon does not appear in your taskbar:

1 Click **Start**→ **All Programs**→ **Dell Support**→ **Dell Support Settings**.

2 Ensure that the **Show icon on the taskbar** option is checked.

![note icon] **NOTE:** If the Dell Support Utility is not available from the **Start** menu, go to support.dell.com and download the software.

The Dell Support Utility is customized for your computing environment.

The ![icon] icon in the taskbar functions differently when you click, double-click, or right-click the icon.

Clicking the Dell Support Icon

Click or right-click the ![icon] icon to perform the following tasks:

- Check your computing environment.

- View the Dell Support Utility settings.

- Access the help file for the Dell Support Utility.

- View frequently asked questions.

- Learn more about the Dell Support Utility.

- Turn the Dell Support Utility off.

Double-Clicking the Dell Support Icon

Double-click the ![icon] icon to manually check your computing environment, view frequently asked questions, access the help file for the Dell Support Utility, and view Dell Support settings.

For more information about the Dell Support Utility, click the question mark (?) at the top of the **Dell™ Support** screen.

12

System Setup Program

Overview

✎ **NOTE:** Your operating system may automatically configure most of the options available in the system setup program, thus overriding options that you set through the system setup program. (An exception is the **External Hot Key** option, which you can disable or enable only through the system setup program.) For more information on configuring features for your operating system, access the Help and Support Center. To access the Help and Support Center in Windows XP, click **Start→ Help and Support. In Windows Vista, click the Windows Vista Start button** 🔲 → **Help and Support.**

You can use the system setup program as follows:

- To set or change user-selectable features—for example, your computer password
- To verify information about the computer's current configuration, such as the amount of system memory

After you set up the computer, run the system setup program to familiarize yourself with your system configuration information and optional settings. You may want to write down the information for future reference.

The system setup screens display the current setup information and settings for your computer, such as:

- System configuration
- Boot order
- Boot (start-up) configuration and docking-device configuration settings
- Basic device-configuration settings
- System security and hard-drive password settings

NOTE: Unless you are an expert computer user or are directed to do so by Dell technical support, do not change the system setup settings. Certain changes might make your computer work incorrectly.

Viewing the System Setup Screens

1   Turn on (or restart) your computer.

2   When the DELL™ logo appears, press <F2> immediately. If you wait too long and the Microsoft® Windows® logo appears, continue to wait until you see the Windows desktop. Then shut down your computer and try again.

System Setup Screens

NOTE: For information about a specific item on a system setup screen, highlight the item and see the **Help** area on the screen.

On each screen, the system setup options are listed at the left. To the right of each option is the setting or value for that option. You can change settings that appear as white type on the screen. Options or values that you cannot change (because they are determined by the computer) appear less bright.

The upper-right corner of the screen displays help information for the currently highlighted option; the lower-right corner displays information about the computer. System-setup key functions are listed across the bottom of the screen.

Commonly Used Options

Certain options require that you reboot the computer for new settings to take effect.

Changing the Boot Sequence

The *boot sequence*, or *boot order*, tells the computer where to look to find the software needed to start the operating system. You can control the boot sequence and enable/disable devices using the **Boot Order** page of the system setup program.

NOTE: To change the boot sequence on a one-time-only basis, see "Performing a One-Time Boot" on page 103.

The **Boot Order** page displays a general list of the bootable devices that may be installed in your computer, including but not limited to the following:

- **Diskette Drive**
- **Internal HDD**
- **Optical Drive**

During the boot routine, the computer starts at the top of the list and scans each enabled device for the operating system start-up files. When the computer finds the files, it stops searching and starts the operating system.

To control the boot devices, select (highlight) a device by pressing the down-arrow or up-arrow key, and then enable or disable the device or change its order in the list.

- To enable or disable a device, highlight the item and press the space bar. Enabled items appear as white and display a small triangle to the left; disabled items appear blue or dimmed without a triangle.

- To reorder a device in the list, highlight the device and then press < + > or <->(not case-sensitive) to move the highlighted device up or down.

Boot sequence changes take effect as soon as you save the changes and exit the system setup program.

Performing a One-Time Boot

You can set a one-time-only boot sequence without entering the system setup program. (You can also use this procedure to boot the Dell Diagnostics on the diagnostics utility partition on your hard drive.)

1 Shut down the computer through the **Start** menu.

2 If the computer is connected to a docking device (docked), undock it. See the documentation that came with your docking device for instructions.

3 Connect the computer to an electrical outlet.

4 Turn on the computer. When the DELL logo appears, press <F12> immediately.

   If you wait too long and the Windows logo appears, continue to wait until you see the Windows desktop. Then shut down your computer and try again.

5 When the boot device list appears, highlight the device from which you want to boot and press <Enter>.

The computer boots to the selected device.

The next time you reboot the computer, the previous boot order is restored.

Enabling the Infrared Sensor

1 Press <Alt><p> until you locate **Infrared Data Port** under **Basic Device Configuration**.

> **NOTE:** Ensure that the COM port that you select is different from the COM port assigned to the serial connector.

2 Press the down-arrow key to select the **Infrared Data Port** setting, and press the right-arrow key to change the setting to a COM port.

3 Press <Esc> and then click **Yes** to save the changes and exit the system setup program. If you are prompted to restart your computer, click **Yes**.

4 Follow the instructions on the screen.

5 After the infrared sensor has been enabled, click **Yes** to restart the computer.

After you enable the infrared sensor, you can use it to establish a link to an infrared device. To set up and use an infrared device, see the infrared device documentation and access the Help and Support Center (click **Start→ Help and Support**).

13

Reinstalling Software

Drivers

What Is a Driver?

A driver is a program that controls a device such as a printer, mouse, or keyboard. All devices require a driver program.

A driver acts like a translator between the device and any other programs that use the device. Each device has its own set of specialized commands that only its driver recognizes.

Dell ships your computer to you with required drivers already installed—no further installation or configuration is needed.

⬤ **NOTICE:** The *Drivers and Utilities* media may contain drivers for operating systems that are not on your computer. Ensure that you are installing software appropriate for your operating system.

Many drivers, such as the keyboard driver, come with your Microsoft Windows operating system. You may need to install drivers if you:

- Upgrade your operating system.
- Reinstall your operating system.
- Connect or install a new device.

Identifying Drivers

If you experience a problem with any device, identify whether the driver is the source of your problem and, if necessary, update the driver.

Microsoft® Windows® XP

1 Click **Start**→ **Control Panel**.

2 Under **Pick a Category**, click **Performance and Maintenance**, and click **System**.

3 In the **System Properties** window, click the **Hardware** tab, and click **Device Manager**.

Microsoft Windows Vista™

1 Click the Windows Vista start button , and right-click **Computer**.

2 Click **Properties**→ **Device Manager**.

> **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue.

Scroll down the list to see if any device has an exclamation point (a yellow circle with a [!]) on the device icon.

If an exclamation point is next to the device name, you may need to reinstall the driver or install a new driver (see "Reinstalling Drivers and Utilities" on page 106).

Reinstalling Drivers and Utilities

> **NOTICE:** The Dell Support website at **support.dell.com** and your *Drivers and Utilities* media provide approved drivers for Dell™ computers. If you install drivers obtained from other sources, your computer might not work correctly.

Using Windows Device Driver Rollback

If a problem occurs on your computer after you install or update a driver, use Windows Device Driver Rollback to replace the driver with the previously installed version.

Windows XP:

1 Click **Start**→ **My Computer**→ **Properties**→ **Hardware**→ **Device Manager**.

2 Right-click the device for which the new driver was installed and click **Properties**.

3 Click the **Drivers** tab→ **Roll Back Driver**.

Windows Vista:

1 Click the Windows Vista start button [image], and right-click **Computer**.

2 Click **Properties**→ **Device Manager**.

> [image] **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

3 Right-click the device for which the new driver was installed and click **Properties**.

4 Click the **Drivers** tab→ **Roll Back Driver**.

If Device Driver Rollback does not resolve the problem, then use System Restore (see "Restoring Your Operating System" on page 110) to return your computer to the operating state that existed before you installed the new driver.

1 With the Windows desktop displayed, insert the *Drivers and Utilities media*.

If this is your first time to use the *Drivers and Utilities media*, go to step 2. If not, go to step 5.

2 When the *Drivers and Utilities media* installation program starts, follow the prompts on the screen.

3 When the **InstallShield Wizard Complete** window appears, remove the Resource media and click **Finish** to restart the computer.

4 When you see the Windows desktop, reinsert the Resource media.

5 At the **Welcome Dell System Owner** screen, click **Next**.

> [image] **NOTE:** The *Drivers and Utilities media* displays drivers only for hardware that came installed in your computer. If you installed additional hardware, the drivers for the new hardware might not be displayed by the ResourceCD. If those drivers are not displayed, exit the ResourceCD program. For drivers information, see the documentation that came with the device.

A message stating that the Resource media is detecting hardware in your computer appears.

The drivers that are used by your computer are automatically displayed in the **My Drivers—The ResourceCD has identified these components in your system** window.

6 Click the driver that you want to reinstall and follow the instructions on the screen.

If a particular driver is not listed, then that driver is not required by your operating system.

Using the Drivers and Utilities Media

If using Device Driver Rollback or System Restore (see "Restoring Your Operating System" on page 110) does not resolve the problem, then reinstall the driver from the *Drivers and Utilities* media.

1 Save and close any open files, and exit any open programs.

2 Insert the *Drivers and Utilities* media.

In most cases, the CD/DVD starts running automatically. If it does not, start Windows Explorer, click your CD/DVD drive directory to display the CD/DVD contents, and then double-click the **autorcd.exe** file. The first time that you run the CD/DVD, it might prompt you to install setup files. Click **OK**, and follow the instructions on the screen to continue.

3 From the **Language** drop-down menu in the toolbar, select your preferred language for the driver or utility (if available).

4 At the welcome screen, click **Next** and wait for the CD/DVD to complete the hardware scan

5 To detect other drivers and utilities, under **Search Criteria**, select the appropriate categories from the **System Model**, **Operating System**, and **Topic** drop-down menus.

A link or links appear(s) for the specific drivers and utilities used by your computer.

6 Click the link of a specific driver or utility to display information about the driver or utility that you want to install.

7 Click the **Install** button (if present) to begin installing the driver or utility. At the welcome screen, follow the screen prompts to complete the installation.

If no **Install** button is present, automatic installation is not an option. For installation instructions, either see the appropriate instructions in the following subsections, or click **Extract**, follow the extracting instructions, and then read the readme file.

If instructed to navigate to the driver files, click the CD/DVD directory on the driver information window to display the files associated with that driver.

Manually Reinstalling Drivers

After extracting the driver files to your hard drive as described in the previous section:

Windows XP:

1 Click **Start**→ **My Computer**→ **Properties**→ **Hardware**→ **Device Manager**.

2 Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).

3 Double-click the name of the device for which you are installing the driver.

4 Click the **Driver** tab→ **Update Driver**.

5 Click **Install from a list or specific location (Advanced)**→ **Next**.

6 Click **Browse** and browse to the location to which you previously copied the driver files.

7 When the name of the appropriate driver appears, click **Next**.

8 Click **Finish** and restart your computer.

Windows Vista:

1 Click the Windows Vista start button 🏁, and right-click **Computer**.

2 Click **Properties**→ **Device Manager**.

> 📝 **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to enter the Device Manager.

3 Double-click the type of device for which you are installing the driver (for example, **Audio** or **Video**).

4 Double-click the name of the device for which you are installing the driver.

5 Click the **Driver** tab→ **Update Driver**→ **Browse my computer for driver software**.

6 Click **Browse** and browse to the location to which you previously copied the driver files.

7 When the name of the appropriate driver appears, click the name of the driver→ **OK**→ **Next**.

8 Click **Finish** and restart your computer.

Hardware and Software Problems

This section discusses issues with Windows XP and Windows Vista operating systems. If a device is either not detected during the operating system setup or is detected but incorrectly configured, you can use the Hardware Troubleshooter to resolve the incompatibility.

To start the Hardware Troubleshooter:

Windows XP:

1 Click **Start**→ **Help and Support**.

2 Type `hardware troubleshooter` in the search field and press <Enter> to start the search.

3 In the **Fix a Problem** section, click **Hardware Troubleshooter**.

4 In the **Hardware Troubleshooter** list, select the option that best describes the problem and click **Next** to follow the remaining troubleshooting steps.

Windows Vista:

1 Click the Windows Vista start button , and click **Help and Support.**

2 Type `hardware troubleshooter` in the search field and press <Enter> to start the search.

3 In the search results, select the option that best describes the problem and follow the remaining troubleshooting steps.

Restoring Your Operating System

You can restore your operating system in the following ways:

- System Restore returns your computer to an earlier operating state without affecting data files. Use System Restore as the first solution for restoring your operating system and preserving data files.

- Dell PC Restore by Symantec (available in Windows XP) and Dell Factory Image Restore (available in Windows Vista) returns your hard drive to the operating state it was in when you purchased the computer. Both

permanently delete all data on the hard drive and remove any programs installed after you received the computer. Use Dell PC Restore or Dell Factory Image Restore only if System Restore did not resolve your operating system problem.

- If you received an *Operating System* disc with your computer, you can use it to restore your operating system. However, using the *Operating System* disc also deletes all data on the hard drive. Use the disc *only* if System Restore did not resolve your operating system problem.

Using Microsoft Windows System Restore

The Windows operating systems provide a System Restore option which allows you to return your computer to an earlier operating state (without affecting data files) if changes to the hardware, software, or other system settings have left the computer in an undesirable operating state. Any changes that System Restore makes to your computer are completely reversible.

NOTICE: Make regular backups of your data files. System Restore does not monitor your data files or recover them.

NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell™ computer to the Windows Classic view.

Starting System Restore

Windows XP:

NOTICE: Before you restore the computer to an earlier operating state, save and close any open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

1 Click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **System Restore**.

2 Click either **Restore my computer to an earlier time** or **Create a restore point**.

3 Click **Next** and follow the remaining on-screen prompts.

Windows Vista:

1 Click **Start** .

2 In the Start Search box, type `System Restore` and press <Enter>.

> ✐ **NOTE:** The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue the desired action.

3 Click **Next** and follow the remaining prompts on the screen.

In the event that System Restore did not resolve the issue, you may undo the last system restore.

Undoing the Last System Restore

> ⊘ **NOTICE:** Before you undo the last system restore, save and close all open files and exit any open programs. Do not alter, open, or delete any files or programs until the system restoration is complete.

Windows XP:

1 Click **Start**→ **All Programs**→ **Accessories**→ **System Tools**→ **System Restore**.

2 Click **Undo my last restoration** and click **Next**.

Windows Vista:

1 Click **Start** .

2 In the Start Search box, type `System Restore` and press <Enter>.

3 Click **Undo my last restoration** and click **Next**.

Enabling System Restore

> ✐ **NOTE:** Windows Vista does not disable System Restore; regardless of low disk space. Therefore, the steps below apply only to Windows XP.

If you reinstall Windows XP with less than 200 MB of free hard-disk space available, System Restore is automatically disabled.

To see if System Restore is enabled:

1 Click **Start**→ **Control Panel**→ **Performance and Maintenance**→ **System**.

2 Click the **System Restore** tab and ensure that **Turn off System Restore** is unchecked.

Using Dell™ PC Restore and Dell Factory Image Restore

NOTICE: Using Dell PC Restore or Dell Factory Image Restore permanently deletes all data on the hard drive and removes any programs or drivers installed after you received your computer. If possible, back up the data before using these options. Use PC Restore or Dell Factory Image Restore only if System Restore did not resolve your operating system problem.

NOTE: Dell PC Restore by Symantec and Dell Factory Image Restore may not be available in certain countries or on certain computers.

Use Dell PC Restore (Windows XP) or Dell Factory Image Restore (Windows Vista) only as the last method to restore your operating system. These options restore your hard drive to the operating state it was in when you purchased the computer. Any programs or files added since you received your computer—including data files—are permanently deleted from the hard drive. Data files include documents, spreadsheets, e-mail messages, digital photos, music files, and so on. If possible, back up all data before using PC Restore or Factory Image Restore.

Windows XP: Dell PC Restore

Using PC Restore:

1   Turn on the computer.

   During the boot process, a blue bar with **www.dell.com** appears at the top of the screen.

2   Immediately upon seeing the blue bar, press <Ctrl><F11>.

   If you do not press <Ctrl><F11> in time, let the computer finish starting, and then restart the computer again.

NOTICE: If you do not want to proceed with PC Restore, click **Reboot**.

3   Click **Restore** and click **Confirm**.

   The restore process takes approximately 6 to 10 minutes to complete.

4   When prompted, click **Finish** to reboot the computer.

NOTE: Do not manually shut down the computer. Click **Finish** and let the computer completely reboot.
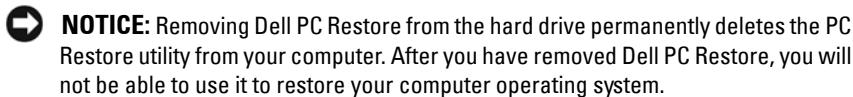
5 When prompted, click **Yes**.

The computer restarts. Because the computer is restored to its original operating state, the screens that appear, such as the End User License Agreement, are the same ones that appeared the first time the computer was turned on.

6 Click **Next**.

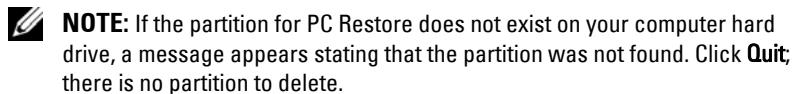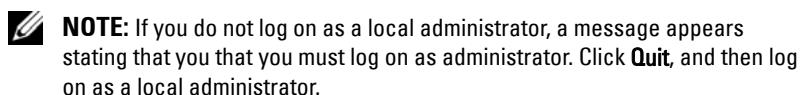The **System Restore** screen appears and the computer restarts.

7 After the computer restarts, click **OK**.

Removing PC Restore:

⊘ **NOTICE:** Removing Dell PC Restore from the hard drive permanently deletes the PC Restore utility from your computer. After you have removed Dell PC Restore, you will not be able to use it to restore your computer operating system.

Dell PC Restore enables you to restore your hard drive to the operating state it was in when you purchased your computer. It is recommended that you *do not* remove PC Restore from your computer, even to gain additional hard-drive space. If you remove PC Restore from the hard drive, you cannot ever recall it, and you will never be able to use PC Restore to return your computer operating system to its original state.

1 Log on to the computer as a local administrator.

2 In Microsoft Windows Explorer, go to **c:\dell\utilities\DSR**.

3 Double-click the filename **DSRIRRemv2.exe**.

📝 **NOTE:** If you do not log on as a local administrator, a message appears stating that you that you must log on as administrator. Click **Quit**, and then log on as a local administrator.

📝 **NOTE:** If the partition for PC Restore does not exist on your computer hard drive, a message appears stating that the partition was not found. Click **Quit**; there is no partition to delete.

4 Click **OK** to remove the PC Restore partition on the hard drive.

5 Click **Yes** when a confirmation message appears.

The PC Restore partition is deleted and the newly available disk space is added to the free space allocation on the hard drive.

6 Right-click **Local Disk (C)** in Windows Explorer, click **Properties**, and verify that the additional disk space is available as indicated by the increased value for **Free Space**.

7 Click **Finish** to close the **PC Restore Removal** window and restart the computer.

Windows Vista: Dell Factory Image Restore

1 Turn on the computer. When the Dell logo appears, press <F8> several times to access the Vista Advanced Boot Options Window.

2 Select **Repair Your Computer**.

The System Recovery Options window appears.

3 Select a keyboard layout and click **Next**.

4 To access the recovery options, log on as a local user. To access the command prompt, type `administrator` in the User name field, then click **OK**.

5 Click **Dell Factory Image Restore**.

> *NOTE:* Depending upon your configuration, you may need to select **Dell Factory Tools**, then **Dell Factory Image Restore**.

The Dell Factory Image Restore welcome screen appears.

6 Click **Next.**

The Confirm Data Deletion screen appears.

> *NOTICE:* If you do not want to proceed with Factory Image Restore, click **Cancel**.

7 Click the checkbox to confirm that you want to continue reformatting the hard drive and restoring the system software to the factory condition, then click **Next**.

The restore process begins and may take five or more minutes to complete. A message appears when the operating system and factory-installed applications have been restored to factory condition.

8 Click **Finish** to reboot the system.

Using the Operating System Media

Before you Begin

If you are considering reinstalling the Windows operating system to correct a problem with a newly installed driver, first try using Windows Device Driver Rollback. See "Using Windows Device Driver Rollback" on page 106. If Device Driver Rollback does not resolve the problem, then use System Restore to return your operating system to the operating state it was in before you installed the new device driver. See "Using Microsoft Windows System Restore" on page 111.

🚫 **NOTICE:** Before performing the installation, back up all data files on your primary hard drive. For conventional hard drive configurations, the primary hard drive is the first drive detected by the computer.

To reinstall Windows, you need the following items:

- Dell™ *Operating System* media
- Dell *Drivers and Utilities* media

📝 **NOTE:** The Dell *Drivers and Utilities* media contains drivers that were installed during the assembly of the computer. Use the Dell *Drivers and Utilities* media to load any required drivers. Depending on the region from which you ordered your computer, or whether you requested the media, the Dell *Drivers and Utilities* media and *Operating System* media may not ship with your computer.

Reinstalling Windows XP or Windows Vista

The reinstallation process can take one to two hours to complete. After you reinstall the operating system, you must also reinstall the device drivers, virus protection program, and other software.

🚫 **NOTICE:** The *Operating System* media provides options for reinstalling Windows XP. The options can overwrite files and possibly affect programs that are installed on your hard drive. Therefore, do not reinstall Windows XP unless a Dell technical support representative instructs you to do so.

1 Save and close any open files and exit any open programs.

2 Insert the *Operating System* disc.

3 Click **Exit** if the `Install Windows` message appears.

4 Restart the computer.

When the DELL logo appears, press <F12> immediately.

NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop; then, shut down your computer and try again.

NOTE: The next steps change the boot sequence for one time only. On the next start-up, the computer boots according to the devices specified in the system setup program.

5   When the boot device list appears, highlight **CD/DVD/CD-RW Drive** and press <Enter>.

6   Press any key to **Boot from CD-ROM**.

7   Follow the instructions on the screen to complete the installation.

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Traveling With Your Computer

Identifying Your Computer

- Attach a name tag or business card to the computer.
- Write down your Service Tag and store it in a safe place away from the computer or carrying case. Use the Service Tag if you need to report a loss or theft to law enforcement officials and to Dell.
- Create a file on the Microsoft® Windows® desktop called **if_found**. Place information such as your name, address, and phone number in this file.
- Contact your credit card company and ask if it offers coded identification tags.

Packing the Computer

- Remove any external devices attached to the computer and store them in a safe place.
- To make the computer as light as possible, replace any devices installed in the module bay with the Dell TravelLite™ module.
- Fully charge the main battery and any spare batteries that you plan to carry with you.
- Shut down the computer.
- Disconnect the AC adapter.

● **NOTICE:** When the display is closed, extraneous items on the keyboard or palm rest could damage the display.

- Remove any extraneous items, such as paper clips, pens, and paper, from the keyboard and palm rest and close the display.
- Use the optional Dell™ carrying case to pack the computer and its accessories together safely.

- Avoid packing the computer with items such as shaving cream, colognes, perfumes, or food.

NOTICE: If the computer has been exposed to extreme temperatures, allow it to acclimate to room temperature for one hour before turning it on.

- Protect the computer, the batteries, and the hard drive from hazards such as extreme temperatures and overexposure to sunlight, dirt, dust, or liquids.

- Pack the computer so that it does not slide around in the trunk of your car or in an overhead storage compartment.

Travel Tips

NOTICE: Do not move the computer while using the optical drive to prevent loss of data.

NOTICE: Do not check the computer as baggage.

- Consider disabling wireless activity on your computer to maximize battery operating time. To disable wireless activity, press<Fn><F2>.

- Consider changing your power management options to maximize battery operating time (see "Power Management Modes" on page 33).

- If you are traveling internationally, carry proof of ownership—or of your right to use the computer if it is company-owned—to speed your passage through customs. Investigate the customs regulations of the countries you plan to visit, and consider acquiring an international carnet (also known as a *merchandise passport*) from your government.

- Find out what type of electrical outlets are used in the countries you will visit, and have appropriate power adapters.

- Check with your credit card company for information about the kinds of emergency travel assistance it offers to users of portable computers.

Traveling by Air

NOTICE: Do not walk the computer through a metal detector. Send the computer through an X-ray machine or have it hand-inspected.

- Ensure that you have a charged battery available in case you are asked to turn on the computer.

• Prior to entering the airplane, verify that using a computer is permitted. Some airlines forbid the use of electronic devices during flight. All airlines forbid the use of electronic devices during takeoff and landing.

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Getting Help

Obtaining Assistance

If you experience a problem with your computer, you can complete the following steps to diagnose and troubleshoot the problem:

1 See "Troubleshooting" on page 85 for information and procedures that pertain to the problem your computer is experiencing.

2 See "Dell Diagnostics" on page 79 for procedures on how to run Dell Diagnostics.

3 Fill out the "Diagnostics Checklist" on page 128.

4 Use Dell's extensive suite of online services available at Dell Support (**support.dell.com**) for help with installation and troubleshooting procedures. See "Online Services" on page 124 for a more extensive list of Dell Support online.

5 If the preceding steps have not resolved the problem, see "Contacting Dell" on page 129

NOTE: Call Dell Support from a telephone near or at the computer so that the support staff can assist you with any necessary procedures.

NOTE: Dell's Express Service Code system may not be available in all countries.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

For instructions on using the Dell Support, see "Technical Support and Customer Service" on page 124.

NOTE: Some of the following services are not always available in all locations outside the continental U.S. Call your local Dell representative for information on availability.

Technical Support and Customer Service

Dell's support service is available to answer your questions about Dell™ hardware. Our support staff uses computer-based diagnostics to provide fast, accurate answers.

To contact Dell's support service, see "Before You Call" on page 127, and then see the contact information for your region or go to **support.dell.com**.

DellConnect

DellConnect is a simple online access tool that allows a Dell service and support associate to access your computer through a broadband connection, diagnose your problem and repair it all under your supervision. For more information, go to **support.dell.com** and click **DellConnect**.

Online Services

You can learn about Dell products and services on the following websites:

- **www.dell.com**
- **www.dell.com/ap** (Asian/Pacific countries only)
- **www.dell.com/jp** (Japan only)
- **www.euro.dell.com** (Europe only)
- **www.dell.com/la** (Latin American and Caribbean countries)
- **www.dell.ca** (Canada only)

You can access Dell Support through the following websites and e-mail addresses:

- Dell Support websites
    - **support.dell.com**
    - **support.jp.dell.com** (Japan only)
    - **support.euro.dell.com** (Europe only)
- Dell Support e-mail addresses
    - mobile_support@us.dell.com
    - support@us.dell.com

- la-techsupport@dell.com (Latin America and Caribbean countries only)
- apsupport@dell.com (Asian/Pacific countries only)
- Dell Marketing and Sales e-mail addresses
    - apmarketing@dell.com (Asian/Pacific countries only)
    - sales_canada@dell.com (Canada only)
- Anonymous file transfer protocol (FTP)

    ftp.dell.com

    Log in as user: `anonymous`, and use your e-mail address as your password.

AutoTech Service

Dell's automated support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their portable and desktop computers.

When you call AutoTech, use your touch-tone telephone to select the subjects that correspond to your questions. For the telephone number to call for your region, see "Contacting Dell" on page 129.

Automated Order-Status Service

To check on the status of any Dell products that you have ordered, you can go to **support.dell.com**, or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call for your region, see "Contacting Dell" on page 129.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call for your region, see "Contacting Dell" on page 129.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at **www.dell.com**. For the telephone number to call for your region or to speak to a sales specialist, see "Contacting Dell" on page 129.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1   Call Dell to obtain a Return Material Authorization Number, and write it clearly and prominently on the outside of the box.

For the telephone number to call for your region, see "Contacting Dell" on page 129.

2   Include a copy of the invoice and a letter describing the reason for the return.

3   Include a copy of the Diagnostics Checklist (see "Diagnostics Checklist" on page 128), indicating the tests that you have run and any error messages reported by the Dell Diagnostics (see "Dell Diagnostics" on page 79).

4   Include any accessories that belong with the item(s) being returned (power cables, software floppy disks, guides, and so on) if the return is for credit.

5   Pack the equipment to be returned in the original (or equivalent) packing materials.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect On Delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at Dell's receiving dock and returned to you.

Before You Call

![NOTE icon] **NOTE:** Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently. You may also be asked for your Service Tag (located on the back or bottom of your computer).

Remember to fill out the Diagnostics Checklist (see "Diagnostics Checklist" on page 128). If possible, turn on your computer before you call Dell for assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer itself. Ensure that the computer documentation is available.

![CAUTION icon] **CAUTION: Before working inside your computer, follow the safety instructions in your *Product Information Guide*.**

Diagnostics Checklist

Name:

Date:

Address:

Phone number:

Service Tag (bar code on the back or bottom of the computer):

Express Service Code:

Return Material Authorization Number (if provided by Dell support technician):

Operating system and version:

Devices:

Expansion cards:

Are you connected to a network? Yes No

Network, version, and network adapter:

Programs and versions:

See your operating system documentation to determine the contents of the system's start-up files. If the computer is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.

Error message, beep code, or diagnostic code:

Description of problem and troubleshooting procedures you performed:

Contacting Dell

For customers in the United States, call 800-WWW-DELL (800-999-3355).

> ✍ **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1 Visit **support.dell.com**.

2 Verify your country or region in the **Choose A Country/Region** drop-down menu at the bottom of the page.

3 Click **Contact Us** on the left side of the page.

4 Select the appropriate service or support link based on your need.

5 Choose the method of contacting Dell that is convenient for you.

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Specifications

> ![NOTE icon] **NOTE:** Offerings may vary by region. For more information regarding the configuration of your computer, click **Start**→ **Help and Support** and select the option to view information about your computer.

Processor	
Processor type	Intel® Core™ 2 Duo and Solo, Celeron
L2 cache	up to 4 MB
External bus frequency	533, 667, and 800 MHz

System Information	
System chipset	Intel GM965

Memory	
Memory module capacities	Supports two SODIMM with 512 MB,1 GB, or 2 GB modules
Memory type	SODIMM
Minimum memory	512 MB
Maximum memory	4 GB

Ports and Connectors	
Audio	microphone connector, stereo headphone/speakers connector
Modem	RJ-11 port
Network adapter	RJ-45 port
USB	2.0
Video	15-pin connector

Ports and Connectors *(continued)*

PCIe ExpressCard	54 mm PCI ExpressCard
3-in-1 Card Reader	Supports SD, MMC, MS, MS Pro, MS Duo including SDHC

Communications

Modem Type:	internal MDC 1.5 solution
	V.92 56 Kbps
	V.90 56 Kbps
Network adapter	Marvell 88E8055 GB LAN (PCI Express Gigabit Ethernet)
Wireless	internal Bluetooth™ V 2.0 with USB 2.0 interface for wireless support

Video

Video type	Intel integrated UMA graphics
Data bus	PCI Express
Video controller	Intel GM965
Video memory	256 MB shared with system memory
LCD interface	LVDS

Audio

Audio type	
Audio controller	RealtekALC268
Stereo conversion	18-bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	PCI bus/AC'97
External	microphone-in connector, stereo headphones/speakers connector

Audio *(continued)*

Speaker	one 4-ohm speakers
Internal speaker amplifier	1.5 W channel into 4 ohms
Volume controls	keyboard shortcuts, program menus

Display

Type (active-matrix TFT)	WXGA
Dimensions:	
Diagonal	307.34 mm (12.1 inches)
Maximum resolutions:	
WXGA	1280 x 800 at 16.7 million colors
Response time (typical)	20-ms rise (maximum), 30-ms fall (maximum)
Refresh rate	60 Hz
Operating angle	0° (closed) to 180°
Viewing angles:	
Horizontal	±40° (XGA and SXGA+) +50°/–60° (UXGA) ±65° (WXGA, WSXGA+, and WUXGA)
Vertical	+50°/–50°
WXGA	supports 12.1 inch (307.34 mm) 1280 x 800, CCFL
	or 12.1 inch (307.34 mm) 1280 x 800, LED B/L
Controls	brightness can be controlled through keyboard shortcuts

Keyboard

Number of keys	87 (U.S. and Canada); 88 (Europe); 91 (Japan)
Layout	QWERTY/AZERTY/Kanji

Touch Pad

X/Y position resolution (graphics table mode)	240 cpi
Size:	
Width	64.88 mm (2.55-inch) sensor-active area
Height	48.88-mm (1.92-inch) rectangle

Battery

Type	4-cell "smart" lithium ion (2400 mAh) 6-cell "smart" lithium ion (4800 mAh)
Weight	
Voltage	4-cell: 14.8 Vdc
	6-cell: 11.1 Vdc
Charge time (approximate):	
Computer off	2.5 hours
Operating time	Battery operating time varies depending on operating conditions and can be significantly reduced under certain power-intensive conditions
	See "Battery Performance" on page 31 for more information on battery life.
Life span (approximate)	300 discharge/charge cycles
Temperature range:	
Operating	0° to 35°C (32° to 95°F)
Storage	–40° to 65°C (–40° to 149°F)

AC Adapter

Input voltage	100–240 VAC
Input current (maximum)	1.6 A
Input frequency	50–60 Hz

AC Adapter *(continued)*	
Output current	
65W	3.9 A (maximum at 4-second pulse) 3.34 A (continuous)
Output power	65W
Rated output voltage	19.5 +/– 1 VDC

Drives	
Optical Disk Drive	
Height	12.7 mm (.5 inches)
Supports	CD-RW/DVD-ROM
Type	DVD Super Multi
Hard Disk Drive	
Height	9.5 mm (2.5 inch) SATA
Capacity	80, 120, 160 GB (5400 RPM)

Physical	
Height	28.3 mm (1.11 inches) (front side)
	36.3 mm (1.43 inches) (rear side)
Width	300 mm (11.81 inches)
Depth	222 mm (8.74 inches)
Weight:	
With 4-cell battery and 12.1 WXGA screen	1.8 kg (4.0 lb)

Environmental	
Temperature range:	
Operating	0° to 40°C (32° to 104°F)
Storage	–40° to 65°C (–40° to 149°F)

Environmental *(continued)*

Relative humidity (maximum):	
Operating	10% to 90% (noncondensing)
Storage	5% to 95% (noncondensing)
Maximum vibration (using a random-vibration spectrum that simulates user environment):	
Operating	0.9 GRMS
Storage	1.3 GRMS
Maximum shock (measured with hard drive in head-parked position and a 2-ms half-sine pulse):	
Operating	122 G
Storage	163 G
Altitude (maximum):	
Operating	–15.2 to 3048 m (–50 to 10,000 ft)
Storage	–15.2 to 10,668 m (–50 to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ISA-S71.04-1985

Appendix

FCC Notice (U.S. Only)

FCC Class B

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 This device may not cause harmful interference.

2 This device must accept any interference received, including interference that may cause undesired operation.

NOTICE: The FCC regulations provide that changes or modifications not expressly approved by Dell Inc. could void your authority to operate this equipment.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.

- Relocate the system with respect to the receiver.

- Move the system away from the receiver.

- Plug the system into a different outlet so that the system and the receiver are on different branch circuits.

If necessary, consult a representative of Dell Inc. or an experienced radio/television technician for additional suggestions.

The following information is provided on the device or devices covered in this document in compliance with the FCC regulations:

- Product name: Dell™ Vostro™ 1200

- Model number: PP16S

- Company name:
  Dell Inc.
  Worldwide Regulatory Compliance & Environmental Affairs
  One Dell Way
  Round Rock, TX 78682 USA
  512-338-4400

NOTE: For further regulatory information, see your *Product Information Guide*.

Cleaning Your Computer

⚠ **CAUTION: Before you begin any of the procedures in this section, follow the safety instructions in the *Product Information Guide*.**

Computer, Keyboard, and Display

⚠ **CAUTION: Before you clean your computer, disconnect the computer from the electrical outlet and remove any installed batteries. Clean your computer with a soft cloth dampened with water. Do not use liquid or aerosol cleaners, which may contain flammable substances.**

- Use a can of compressed air to remove dust from between the keys on the keyboard.

NOTICE: To avoid damaging the computer or display, do not spray cleaning solution directly onto the display. Only use products specifically designed for cleaning displays, and follow the instructions that are included with the product.

NOTICE: Do not allow water from the cloth to seep between the touch pad and the surrounding palm rest.

- Moisten a soft, lint-free cloth with water or a solution suitable for the display's antistatic coating, and then wipe the display until it is clean.

- Moisten a soft, lint-free cloth with water and wipe the computer and keyboard.

Mouse (Non-Optical)

1. Turn the retainer ring on the underside of your mouse counterclockwise, and then remove the ball.

2. Wipe the ball with a clean, lint-free cloth.

3. Blow carefully into the ball cage to dislodge dust and lint.

4. Clean the rollers inside the ball cage with a cotton swab moistened lightly with isopropyl alcohol.

5. Recenter the rollers in their channels, as needed. Ensure that fluff from the swab is not left on the rollers.

6. Replace the ball and retainer ring, and then turn the retainer ring clockwise until it clicks into place.

Touch Pad

1. Shut down and turn off your computer.

2. Disconnect any attached devices from the computer and from their electrical outlets.

3. Remove any installed batteries (see "Removing the Battery" on page 36).

4. Moisten a soft, lint-free cloth with water, and wipe it gently across the surface of the touch pad. Do not allow water from the cloth to seep between the touch pad and the surrounding palm rest.

CDs and DVDs

NOTICE: Always use compressed air to clean the lens in the CD/DVD drive, and follow the instructions that come with the compressed-air product. Never touch the lens in the drive.

If you notice problems, such as skipping, with the playback quality of your CDs or DVDs, try cleaning the discs.

1. Hold the disc by its outer edge. You can also touch the inside edge of the center hole.

NOTICE: To avoid damaging the surface, do not wipe in a circular motion around the disc.

2 With a soft, lint-free cloth, gently wipe the bottom of the disc (the unlabeled side) in a straight line from the center to the outer edge of the disc.

For stubborn dirt, try using water or a diluted solution of water and mild soap. You can also purchase commercial products that clean discs and provide some protection from dust, fingerprints, and scratches. Cleaning products for CDs are also safe to use on DVDs.

Glossary

Terms in this Glossary are provided for informational purposes only and may or may not describe features included with your particular computer.

A

AC — alternating current — The form of electricity that powers your computer when you plug the AC adapter power cable in to an electrical outlet.

ACPI — advanced configuration and power interface — A power management specification that enables Microsoft® Windows® operating systems to put a computer in standby or hibernate mode to conserve the amount of electrical power allocated to each device attached to the computer.

AGP — accelerated graphics port — A dedicated graphics port that allows system memory to be used for video-related tasks. AGP delivers a smooth, true-color video image because of the faster interface between the video circuitry and the computer memory.

AHCI — Advanced Host Controller Interface — An interface for a SATA hard drive Host Controller which allows the storage driver to enable technologies such as Native Command Queuing (NCQ) and hot plug.

antivirus software — A program designed to identify, quarantine, and/or delete viruses from your computer.

ASF — alert standards format — A standard to define a mechanism for reporting hardware and software alerts to a management console. ASF is designed to be platform- and operating system-independent.

B

battery life span — The length of time (years) during which a portable computer battery is able to be depleted and recharged.

battery operating time — The length of time (minutes or hours) that a portable computer battery powers the computer.

BIOS — basic input/output system — A program (or utility) that serves as an interface between the computer hardware and the operating system. Unless you understand what effect these settings have on the computer, do not change them. Also referred to as *system setup*.

bit — The smallest unit of data interpreted by your computer.

Blu-ray Disc™ (BD)— An optical storage technology offering storage capacity of up to 50 GB, full 1080p video resolution (HDTV required), and as many as 7.1 channels of native, uncompressed surround sound.

Bluetooth® wireless technology — A wireless technology standard for short-range (9 m [29 feet]) networking devices that allows for enabled devices to automatically recognize each other.

boot sequence — Specifies the order of the devices from which the computer attempts to boot.

bootable media — A CD, DVD, or floppy disk that you can use to start your computer. In case your hard drive is damaged or your computer has a virus, ensure that you always have a bootable CD, DVD, or floppy disk available. Your *Drivers and Utilities* media is an example of bootable media.

bps — bits per second — The standard unit for measuring data transmission speed.

BTU — British thermal unit — A measurement of heat output.

bus — A communication pathway between the components in your computer.

bus speed — The speed, given in MHz, that indicates how fast a bus can transfer information.

byte — The basic data unit used by your computer. A byte is usually equal to 8 bits.

C

C — Celsius — A temperature measurement scale where 0° is the freezing point and 100° is the boiling point of water.

cache — A special high-speed storage mechanism which can be either a reserved section of main memory or an independent high-speed storage device. The cache enhances the efficiency of many processor operations.

L1 cache — Primary cache stored inside the processor.

L2 cache — Secondary cache which can either be external to the processor or incorporated into the processor architecture.

carnet — An international customs document that facilitates temporary imports into foreign countries. Also known as a *merchandise passport*.

CD-R — CD recordable — A recordable version of a CD. Data can be recorded only once onto a CD-R. Once recorded, the data cannot be erased or written over.

CD-RW — CD rewritable — A rewritable version of a CD. Data can be written to a CD-RW disc, and then erased and written over (rewritten).

CD-RW drive — A drive that can read CDs and write to CD-RW (rewritable CDs) and CD-R (recordable CDs) discs. You can write to CD-RW discs multiple times, but you can write to CD-R discs only once.

CD-RW/DVD drive — A drive, sometimes referred to as a combo drive, that can read CDs and DVDs and write to CD-RW (rewritable CDs) and CD-R (recordable CDs) discs. You can write to CD-RW discs multiple times, but you can write to CD-R discs only once.

clock speed — The speed, given in MHz, that indicates how fast computer components that are connected to the system bus operate.

CMOS — A type of electronic circuit. Computers use a small amount of battery-powered CMOS memory to hold date, time, and system setup options.

COA — Certificate of Authenticity — The Windows alpha-numeric code located on a sticker on your computer. Also referred to as the *Product Key* or *Product ID*.

Consumer IR Port— A port on the front of the computer that allows certain software applications to be controlled by the Dell Travel Remote in some systems. In other systems, this port allows you to transfer data between the computer and infrared-compatible devices without using a cable connection.

Control Panel — A Windows utility that allows you to modify operating system and hardware settings, such as display settings.

controller — A chip that controls the transfer of data between the processor and memory or between the processor and devices.

CRIMM — continuity rambus in-line memory module — A special module that has no memory chips and is used to fill unused RIMM slots.

cursor — The marker on a display or screen that shows where the next keyboard, touch pad, or mouse action will occur. It often is a blinking solid line, an underline character, or a small arrow.

D

DDR SDRAM — double-data-rate SDRAM — A type of SDRAM that doubles the data burst cycle, improving system performance.

DDR2 SDRAM — double-data-rate 2 SDRAM — A type of DDR SDRAM that uses a 4-bit prefetch and other architectural changes to boost memory speed to over 400 MHz.

Dell Travel Remote— A small remote control stored in the portable computer's ExpressCard slot which provides simple functionality for enjoying multimedia content.

device driver — See *driver*.

DIMM — dual in-line memory module — A circuit board with memory chips that connects to a memory module on the system board.

DIN connector — A round, six-pin connector that conforms to DIN (Deutsche Industrie-Norm) standards; it is typically used to connect PS/2 keyboard or mouse cable connectors.

disk striping — A technique for spreading data over multiple disk drives. Disk striping can speed up operations that retrieve data from disk storage. Computers that use disk striping generally allow the user to select the data unit size or stripe width.

DMA — direct memory access — A channel that allows certain types of data transfer between RAM and a device to bypass the processor.

docking device — provides port replication, cable management, and security features to adapt your notebook to a desktop workspace.

DMTF — Distributed Management Task Force — A consortium of hardware and software companies who develop management standards for distributed desktop, network, enterprise, and Internet environments.

domain — A group of computers, programs, and devices on a network that are administered as a unit with common rules and procedures for use by a specific group of users. A user logs on to the domain to gain access to the resources.

DRAM — dynamic random-access memory — Memory that stores information in integrated circuits containing capacitors.

driver — Software that allows the operating system to control a device such as a printer. Many devices do not work properly if the correct driver is not installed in the computer.

DSL — Digital Subscriber Line — A technology that provides a constant, high-speed Internet connection through an analog telephone line.

dual-core — A technology in which two physical computational units exist inside a single processor package, thereby increasing computing efficiency and multi-tasking ability.

dual display mode — A display setting that allows you to use a second monitor as an extension of your display. Also referred to as *extended display mode*.

DVD-R — DVD recordable — A recordable version of a DVD. Data can be recorded only once onto a DVD-R. Once recorded, the data cannot be erased or written over.

DVD+RW — DVD rewritable — A rewritable version of a DVD. Data can be written to a DVD+RW disc, and then erased and written over (rewritten). (DVD+RW technology is different from DVD-RW technology.)

DVD+RW drive — drive that can read DVDs and most CD media and write to DVD+RW (rewritable DVDs) discs.

DVI — digital video interface — A standard for digital transmission between a computer and a digital video display.

E

ECC — error checking and correction — A type of memory that includes special circuitry for testing the accuracy of data as it passes in and out of memory.

ECP — extended capabilities port — A parallel connector design that provides improved bidirectional data transmission. Similar to EPP, ECP uses direct memory access to transfer data and often improves performance.

EIDE — enhanced integrated device electronics — An improved version of the IDE interface for hard drives and CD drives.

EMI — electromagnetic interference — Electrical interference caused by electromagnetic radiation.

ENERGY STAR® — Environmental Protection Agency requirements that decrease the overall consumption of electricity.

EPP — enhanced parallel port — A parallel connector design that provides bidirectional data transmission.

ESD — electrostatic discharge — A rapid discharge of static electricity. ESD can damage integrated circuits found in computer and communications equipment.

expansion card — A circuit board that installs in an expansion slot on the system board in some computers, expanding the capabilities of the computer. Examples include video, modem, and sound cards.

expansion slot — A connector on the system board (in some computers) where you insert an expansion card, connecting it to the system bus.

ExpressCard — A removable I/O card adhering to the PCMCIA standard. Modems and network adapters are common types of ExpressCards. ExpressCards support both the PCI Express and USB 2.0 standard.

Express Service Code — A numeric code located on a sticker on your Dell™ computer. Use the Express Service Code when contacting Dell for assistance. Express Service Code service may not be available in some countries.

extended display mode — A display setting that allows you to use a second monitor as an extension of your display. Also referred to as *dual display mode*.

extended PC Card — A PC Card that extends beyond the edge of the PC Card slot when installed.

F

Fahrenheit — A temperature measurement scale where 32° is the freezing point and 212° is the boiling point of water.

FBD — fully-buffered DIMM — A DIMM with DDR2 DRAM chips and an Advanced Memory Buffer (AMB) that speeds communication between the DDR2 SDRAM chips and the system.

FCC — Federal Communications Commission — A U.S. agency responsible for enforcing communications-related regulations that state how much radiation computers and other electronic equipment can emit.

fingerprint reader — A strip sensor that uses your unique fingerprint to authenticate your user identity to help secure your computer.

folder — A term used to describe space on a disk or drive where files are organized and grouped. Files in a folder can be viewed and ordered in various ways, such as alphabetically, by date, and by size.

format — The process that prepares a drive or disk for file storage. When a drive or disk is formatted, the existing information on it is lost.

FSB — front side bus — The data path and physical interface between the processor and RAM.

FTP — file transfer protocol — A standard Internet protocol used to exchange files between computers connected to the Internet.

G

G — gravity — A measurement of weight and force.

GB — gigabyte — A measurement of data storage that equals 1024 MB (1,073,741,824 bytes). When used to refer to hard drive storage, the term is often rounded to 1,000,000,000 bytes.

GHz — gigahertz — A measurement of frequency that equals one thousand million Hz, or one thousand MHz. The speeds for computer processors, buses, and interfaces are often measured in GHz.

graphics mode — A video mode that can be defined as *x* horizontal pixels by *y* vertical pixels by *z* colors. Graphics modes can display an unlimited variety of shapes and fonts.

GUI — graphical user interface — Software that interacts with the user by means of menus, windows, and icons. Most programs that operate on the Windows operating systems are GUIs.

H

hard drive — A drive that reads and writes data on a hard disk. The terms hard drive and hard disk are often used interchangeably.

heat sink — A metal plate on some processors that helps dissipate heat.

hibernate mode — A power management mode that saves everything in memory to a reserved space on the hard drive and then turns off the computer. When you restart the computer, the memory information that was saved to the hard drive is automatically restored.

HTTP — hypertext transfer protocol — A protocol for exchanging files between computers connected to the Internet.

Hyper-Threading — Hyper-Threading is an Intel technology that can enhance overall computer performance by allowing one physical processor to function as two logical processors, capable of performing certain tasks simultaneously.

Hz — hertz — A unit of frequency measurement that equals 1 cycle per second. Computers and electronic devices are often measured in kilohertz (kHz), megahertz (MHz), gigahertz (GHz), or terahertz (THz).

I

iAMT — Intel® Active Management Technology — Delivers more secure systems management capabilities, regardless of whether the computer is turned on or off, or the operating system is not responding.

IC — integrated circuit — A semiconductor wafer, or chip, on which thousands or millions of tiny electronic components are fabricated for use in computer, audio, and video equipment.

IDE — integrated device electronics — An interface for mass storage devices in which the controller is integrated into the hard drive or CD drive.

IEEE 1394 — Institute of Electrical and Electronics Engineers, Inc. — A high-performance serial bus used to connect IEEE 1394-compatible devices, such as digital cameras and DVD players, to the computer.

infrared sensor — A port that allows you to transfer data between the computer and infrared-compatible devices without using a cable connection.

integrated — Usually refers to components that are physically located on the computer's system board. Also referred to as *built-in*.

I/O — input/output — An operation or device that enters and extracts data from your computer. Keyboards and printers are I/O devices.

I/O address — An address in RAM that is associated with a specific device (such as a serial connector, parallel connector, or expansion slot) and allows the processor to communicate with that device.

IrDA — Infrared Data Association — The organization that creates international standards for infrared communications.

IRQ — interrupt request — An electronic pathway assigned to a specific device so that the device can communicate with the processor. Each device connection must be assigned an IRQ. Although two devices can share the same IRQ assignment, you cannot operate both devices simultaneously.

ISP — Internet service provider — A company that allows you to access its host server to connect directly to the Internet, send and receive e-mail, and access websites. The ISP typically provides you with a software package, user name, and access phone numbers for a fee.

K

Kb — kilobit — A unit of data that equals 1024 bits. A measurement of the capacity of memory integrated circuits.

KB — kilobyte — A unit of data that equals 1024 bytes but is often referred to as 1000 bytes.

key combination — A command requiring you to press multiple keys at the same time.

kHz — kilohertz — A measurement of frequency that equals 1000 Hz.

L

LAN — local area network — A computer network covering a small area. A LAN usually is confined to a building or a few nearby buildings. A LAN can be connected to another LAN over any distance through telephone lines and radio waves to form a wide area network (WAN).

LCD — liquid crystal display — The technology used by portable computer and flat-panel displays.

LED — light-emitting diode — An electronic component that emits light to indicate the status of the computer.

local bus — A data bus that provides a fast throughput for devices to the processor.

LPT — line print terminal — The designation for a parallel connection to a printer or other parallel device.

M

Mb — megabit — A measurement of memory chip capacity that equals 1024 Kb.

Mbps — megabits per second — One million bits per second. This measurement is typically used for transmission speeds for networks and modems.

MB — megabyte — A measurement of data storage that equals 1,048,576 bytes. 1 MB equals 1024 KB. When used to refer to hard drive storage, the term is often rounded to 1,000,000 bytes.

MB/sec — megabytes per second — One million bytes per second. This measurement is typically used for data transfer ratings.

media bay — A bay that supports devices such as optical drives, a second battery, or a Dell TravelLite™ module.

memory — A temporary data storage area inside your computer. Because the data in memory is not permanent, it is recommended that you frequently save your files while you are working on them, and always save your files before you shut down the computer. Your computer can contain several different forms of memory, such as RAM, ROM, and video memory. Frequently, the word memory is used as a synonym for RAM.

memory address — A specific location where data is temporarily stored in RAM.

memory mapping — The process by which the computer assigns memory addresses to physical locations at start-up. Devices and software can then identify information that the processor can access.

memory module — A small circuit board containing memory chips, which connects to the system board.

MHz — megahertz — A measure of frequency that equals 1 million cycles per second. The speeds for computer processors, buses, and interfaces are often measured in MHz.

Mini PCI — A standard for integrated peripheral devices with an emphasis on communications such as modems and NICs. A Mini PCI card is a small external card that is functionally equivalent to a standard PCI expansion card.

modem — A device that allows your computer to communicate with other computers over analog telephone lines. Three types of modems include: external, PC Card, and internal. You typically use your modem to connect to the Internet and exchange e-mail.

module bay — See *media bay*.

MP — megapixel — A measure of image resolution used for digital cameras.

ms — millisecond — A measure of time that equals one thousandth of a second. Access times of storage devices are often measured in ms.

N

network adapter — A chip that provides network capabilities. A computer may include a network adapter on its system board, or it may contain a PC Card with an adapter on it. A network adapter is also referred to as a *NIC* (network interface controller).

NIC — See *network adapter*.

notification area — The section of the Windows taskbar that contains icons for providing quick access to programs and computer functions, such as the clock, volume control, and print status. Also referred to as *system tray*.

ns — nanosecond — A measure of time that equals one billionth of a second.

NVRAM — nonvolatile random access memory — A type of memory that stores data when the computer is turned off or loses its external power source. NVRAM is used for maintaining computer configuration information such as date, time, and other system setup options that you can set.

O

optical drive — A drive that uses optical technology to read or write data from CDs, DVDs, or DVD+RWs. Example of optical drives include CD drives, DVD drives, CD-RW drives, and CD-RW/DVD combo drives.

P

parallel connector — An I/O port often used to connect a parallel printer to your computer. Also referred to as an *LPT port*.

partition — A physical storage area on a hard drive that is assigned to one or more logical storage areas known as logical drives. Each partition can contain multiple logical drives.

PC Card — A removable I/O card adhering to the PCMCIA standard. Modems and network adapters are common types of PC Cards.

PCI — peripheral component interconnect — PCI is a local bus that supports 32-and 64-bit data paths, providing a high-speed data path between the processor and devices such as video, drives, and networks.

PCI Express — A modification to the PCI interface that boosts the data transfer rate between the processor and the devices attached to it. PCI Express can transfer data at speeds from 250 MB/sec to 4 GB/sec. If the PCI Express chip set and the device are capable of different speeds, they will operate at the slower speed.

PCMCIA — Personal Computer Memory Card International Association — The organization that establishes standards for PC Cards.

PIO — programmed input/output — A method of transferring data between two devices through the processor as part of the data path.

pixel — A single point on a display screen. Pixels are arranged in rows and columns to create an image. A video resolution, such as 800 x 600, is expressed as the number of pixels across by the number of pixels up and down.

Plug-and-Play — The ability of the computer to automatically configure devices. Plug and Play provides automatic installation, configuration, and compatibility with existing hardware if the BIOS, operating system, and all devices are Plug and Play compliant.

POST — power-on self-test — Diagnostics programs, loaded automatically by the BIOS, that perform basic tests on the major computer components, such as memory, hard drives, and video. If no problems are detected during POST, the computer continues the start-up.

processor — A computer chip that interprets and executes program instructions. Sometimes the processor is referred to as the CPU (central processing unit).

PS/2 — personal system/2 — A type of connector for attaching a PS/2-compatible keyboard, mouse, or keypad.

PXE — pre-boot execution environment — A WfM (Wired for Management) standard that allows networked computers that do not have an operating system to be configured and started remotely.

R

RAID — redundant array of independent disks — A method of providing data redundancy. Some common implementations of RAID include RAID 0, RAID 1, RAID 5, RAID 10, and RAID 50.

RAM — random-access memory — The primary temporary storage area for program instructions and data. Any information stored in RAM is lost when you shut down your computer.

readme file — A text file included with a software package or hardware product. Typically, readme files provide installation information and describe new product enhancements or corrections that have not yet been documented.

read-only — Data and/or files you can view but cannot edit or delete. A file can have read-only status if:

- It resides on a physically write-protected floppy disk, CD, or DVD.
- It is located on a network in a directory and the system administrator has assigned rights only to specific individuals.

refresh rate — The frequency, measured in Hz, at which your screen's horizontal lines are recharged (sometimes also referred to as its *vertical frequency*). The higher the refresh rate, the less video flicker can be seen by the human eye.

resolution — The sharpness and clarity of an image produced by a printer or displayed on a monitor. The higher the resolution, the sharper the image.

RFI — radio frequency interference — Interference that is generated at typical radio frequencies, in the range of 10 kHz to 100,000 MHz. Radio frequencies are at the lower end of the electromagnetic frequency spectrum and are more likely to have interference than the higher frequency radiations, such as infrared and light.

ROM — read-only memory — Memory that stores data and programs that cannot be deleted or written to by the computer. ROM, unlike RAM, retains its contents after you shut down your computer. Some programs essential to the operation of your computer reside in ROM.

RPM — revolutions per minute — The number of rotations that occur per minute. Hard drive speed is often measured in rpm.

RTC — real time clock — Battery-powered clock on the system board that keeps the date and time after you shut down the computer.

RTCRST — real-time clock reset — A jumper on the system board of some computers that can often be used for troubleshooting problems.

S

SAS — serial attached SCSI — A faster, serial version of the SCSI interface (as opposed to the original SCSI parallel architecture).

SATA — serial ATA — A faster, serial version of the ATA (IDE) interface.

ScanDisk — A Microsoft utility that checks files, folders, and the hard disk's surface for errors. ScanDisk often runs when you restart the computer after it has stopped responding.

SCSI — small computer system interface — A high-speed interface used to connect devices to a computer, such as hard drives, CD drives, printers, and scanners. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

SDRAM — synchronous dynamic random-access memory — A type of DRAM that is synchronized with the optimal clock speed of the processor.

serial connector — An I/O port often used to connect devices such as a handheld digital device or digital camera to your computer.

Service Tag — A bar code label on your computer that identifies your computer when you access Dell Support at **support.dell.com** or when you call Dell for customer service or technical support.

setup program — A program that is used to install and configure hardware and software. The **setup.exe** or **install.exe** program comes with most Windows software packages. *Setup program* differs from *system setup*.

shortcut — An icon that provides quick access to frequently used programs, files, folders, and drives. When you place a shortcut on your Windows desktop and double-click the icon, you can open its corresponding folder or file without having to find it first. Shortcut icons do not change the location of files. If you delete a shortcut, the original file is not affected. Also, you can rename a shortcut icon.

SIM — Subscriber Identity Module — A SIM card contains a microchip that encrypts voice and data transmissions. SIM cards can be used in phones or portable computers.

smart card — A card that is embedded with a processor and a memory chip. Smart cards can be used to authenticate a user on computers equipped for smart cards.

S/PDIF — Sony/Philips Digital Interface — An audio transfer file format that allows the transfer of audio from one file to another without converting it to and from an analog format, which could degrade the quality of the file.

standby mode — A power management mode that shuts down all unnecessary computer operations to save energy.

Strike Zone™ — Reinforced area of the platform base that protects the hard drive by acting as a dampening device when a computer experiences resonating shock or is dropped (whether the computer is on or off).

surge protectors — Prevent voltage spikes, such as those that may occur during an electrical storm, from entering the computer through the electrical outlet. Surge protectors do not protect against lightning strikes or against brownouts, which occur when the voltage drops more than 20 percent below the normal AC-line voltage level.

Network connections cannot be protected by surge protectors. Always disconnect the network cable from the network connector during electrical storms.

SVGA — super-video graphics array — A video standard for video cards and controllers. Typical SVGA resolutions are 800 x 600 and 1024 x 768.

The number of colors and resolution that a program displays depends on the capabilities of the monitor, the video controller and its drivers, and the amount of video memory installed in the computer.

S-video TV-out — A connector used to attach a TV or digital audio device to the computer.

SXGA — super-extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1280 x 1024.

SXGA+ — super-extended graphics array plus — A video standard for video cards and controllers that supports resolutions up to 1400 x 1050.

system board — The main circuit board in your computer. Also known as the *motherboard*.

system setup — A utility that serves as an interface between the computer hardware and the operating system. System setup allows you to configure user-selectable options in the BIOS, such as date and time or system password. Unless you understand what effect the settings have on the computer, do not change the settings for this program.

T

TAPI — telephony application programming interface — Enables Windows programs to operate with a wide variety of telephony devices, including voice, data, fax, and video.

text editor — A program used to create and edit files that contain only text; for example, Windows Notepad uses a text editor. Text editors do not usually provide word wrap or formatting functionality (the option to underline, change fonts, and so on).

travel module — A plastic device designed to fit inside the module bay of a portable computer to reduce the weight of the computer.

U

UAC — user account control— Microsoft Windows Vista™ security feature that, when enabled, provides an added layer of security between user accounts and access to operating system settings.

UMA — unified memory allocation — System memory dynamically allocated to video.

UPS — uninterruptible power supply — A backup power source used when the electrical power fails or drops to an unacceptable voltage level. A UPS keeps a computer running for a limited amount of time when there is no electrical power. UPS

systems typically provide surge suppression and may also provide voltage regulation. Small UPS systems provide battery power for a few minutes to enable you to shut down your computer.

USB — universal serial bus — A hardware interface for a low-speed device such as a USB-compatible keyboard, mouse, joystick, scanner, set of speakers, printer, broadband devices (DSL and cable modems), imaging devices, or storage devices. Devices are plugged directly in to a 4-pin socket on your computer or in to a multi-port hub that plugs in to your computer. USB devices can be connected and disconnected while the computer is turned on, and they can also be daisy-chained together.

UTP — unshielded twisted pair — Describes a type of cable used in most telephone networks and some computer networks. Pairs of unshielded wires are twisted to protect against electromagnetic interference, rather than relying on a metal sheath around each pair of wires to protect against interference.

UXGA — ultra extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1600 x 1200.

V

video controller — The circuitry on a video card or on the system board (in computers with an integrated video controller) that provides the video capabilities—in combination with the monitor—for your computer.

video memory — Memory that consists of memory chips dedicated to video functions. Video memory is usually faster than system memory. The amount of video memory installed primarily influences the number of colors that a program can display.

video mode — A mode that describes how text and graphics are displayed on a monitor. Graphics-based software, such as Windows operating systems, displays in video modes that can be defined as *x* horizontal pixels by *y* vertical pixels by *z* colors. Character-based software, such as text editors, displays in video modes that can be defined as *x* columns by *y* rows of characters.

video resolution — See *resolution*.

virus — A program that is designed to inconvenience you or to destroy data stored on your computer. A virus program moves from one computer to another through an infected disk, software downloaded from the Internet, or e-mail attachments. When an infected program starts, its embedded virus also starts.

A common type of virus is a boot virus, which is stored in the boot sectors of a floppy disk. If the floppy disk is left in the drive when the computer is shut down and then turned on, the computer is infected when it reads the boot sectors of the floppy disk

expecting to find the operating system. If the computer is infected, the boot virus may replicate itself onto all the floppy disks that are read or written in that computer until the virus is eradicated.

V — volt — The measurement of electric potential or electromotive force. One V appears across a resistance of 1 ohm when a current of 1 ampere flows through that resistance.

W

W — watt — The measurement of electrical power. One W is 1 ampere of current flowing at 1 volt.

WHr — watt-hour — A unit of measure commonly used to indicate the approximate capacity of a battery. For example, a 66-WHr battery can supply 66 W of power for 1 hour or 33 W for 2 hours.

wallpaper — The background pattern or picture on the Windows desktop. Change your wallpaper through the Windows Control Panel. You can also scan in your favorite picture and make it wallpaper.

WLAN — wireless local area network. A series of interconnected computers that communicate with each other over the air waves using access points or wireless routers to provide Internet access.

write-protected — Files or media that cannot be changed. Use write-protection when you want to protect data from being changed or destroyed. To write-protect a 3.5-inch floppy disk, slide its write-protect tab to the open position.

WWAN — wireless wide area network. A wireless high-speed data network using cellular technology and covering a much larger geographic area than WLAN.

WXGA — wide-aspect extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1280 x 800.

X

XGA — extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1024 x 768.

Z

ZIF — zero insertion force — A type of socket or connector that allows a computer chip to be installed or removed with no stress applied to either the chip or its socket.

Zip — A popular data compression format. Files that have been compressed with the Zip format are called Zip files and usually have a filename extension of **.zip**. A special kind of zipped file is a self-extracting file, which has a filename extension of **.exe**. You can unzip a self-extracting file by double-clicking it.

Zip drive — A high-capacity floppy drive developed by Iomega Corporation that uses 3.5-inch removable disks called Zip disks. Zip disks are slightly larger than regular floppy disks, about twice as thick, and hold up to 100 MB of data.

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